NETWORK WORLD
The Newsweekly of User Networking Strategies
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DG bolsters AViiON's role as net server

By Paul Desmond
Senior Editor

WESTBOROUGH, Mass. — Data General Corp. last week introduced a broad range of communications products intended to better position its AViiON Unix-based computer as the server of choice for multivendor nets.

DG unveiled some 30 products, including software that enables the AViiON to act as a server in Apple Computer, Inc. AppleTalk and Unix-based LAN Manager local-area networks, adding to the AViiON's existing support for Novell, Inc. NetWare servers.

The vendor also rolled out its first token-ring network connections for the AViiON, including a token-ring link to IBM nets and a link to Digital Equipment Corp. DECnet networks.

"In a nutshell, they want to be connected to everything else," said Charles Robbins, director of communications research at Aberdeen Group, Inc., a Boston consultancy. "What struck me was the extensiveness of it. They're biting off a lot."

What differentiates the AViiON as a server is the breadth of connectivity options it will support, said John Anderson, manager of communications marketing

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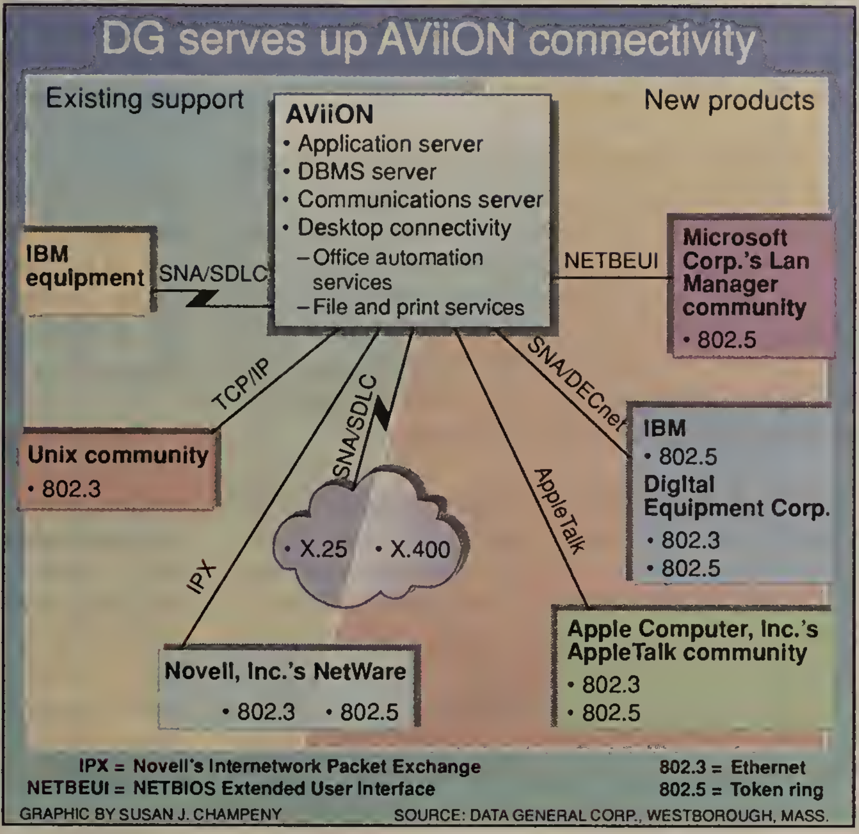
DG serves up AViiON connectivity



IPX = Novell's Internetwork Packet Exchange
NETBEUI = NETBIOS Extended User Interface
802.3 = Ethernet
802.5 = Token ring

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: DATA GENERAL CORP., WESTBOROUGH, MASS.

IBM to disclose blueprint for network management

By Paul Desmond
Senior Editor

RESEARCH TRIANGLE PARK, N.C. — IBM offered insight into network management topics ranging from APPN to SNMP in recent interviews at its net management headquarters here and said it will soon unveil a statement further detailing future plans.

Bill Warner, director of network management in IBM's Networking Systems group, said a white paper the company is preparing on an array of Systems Network Architecture issues will address how IBM's net management strategy is evolving to accommodate distributed points of control throughout a network.

According to Warner, IBM has been laying the groundwork for distributed network management functions for months with the announcement of products such as its LAN Network Manager and the licensing of Hewlett-Packard

(continued on page 58)

Data base protocol unites SQL products

SQL Access Group shows for first time how its technology solves SQL interoperability problems.

By Timothy O'Brien
West Coast Bureau Chief

NEW YORK — In an event culminating a two-year development effort, a consortium of data base companies last week demonstrated for the first time a common data base protocol intended to facilitate data sharing among different makes of SQL products.

Members of the SQL Access Group previewed versions of standard data base products modified to include the unnamed protocol in a demonstration that showed various SQL front-end applications on client workstations accessing several different SQL back-end data base servers.

"Up until now, every client/server data base was based on a proprietary protocol," explained Roger Sippl, chairman of the SQL Access Group. "With this standard, any client can speak to any data base server since they all speak the same language."

With many companies using various data base management systems and different hardware platforms, the inability to manage information dispersed across an organization has slowed the deployment and utilization of enterprisewide information nets.

Sippl said the group's mandate is to respond to increasing user demand for SQL interoperability, and this protocol demonstra-

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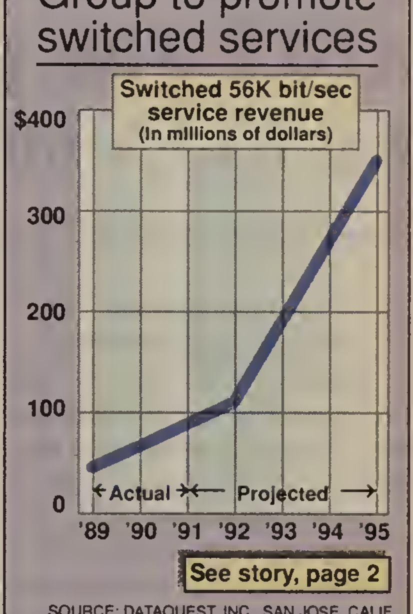
Group to promote switched services



See story, page 2

SOURCE: DATAQUEST, INC., SAN JOSE, CALIF.
GRAPHIC BY SUSAN J. CHAMPENY

Frame relay steals show at ComNet

By Barton Crockett
Senior Editor

SAN FRANCISCO — Frame relay took top billing at the Communication Networks West conference here last week as several vendors released pricing and availability information for frame relay products and services announced over the past several months.

Additionally, Netrix Corp. staged what was billed as the most extensive multivendor frame relay demonstration ever, and the Frame Relay Forum held its first annual meeting, during which it elected officers and a board of trustees.

More than 120 representatives from 65 companies attended the frame relay forum, which made progress in its effort to establish a common vendor implementation of the frame relay

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NETLINE

NOVELL PUTS UP $8m to buy desktop operating system vendor Digital Research. Page 4.

VENDORS PLAN X.500 pilot test to help spur development of public E-mail directory services. Page 4.

FUTURE OF OS/2 as a client operating system is shaky due to fragmentation of vendor backing. The second in a three-part series. Page 4.

NEW STANDARD SET for low-cost videoconferencing systems, thanks to introduction by PictureTel. Page 4.

FLEET/NORSTAR to link 900 branch offices with new VSAT net. Page 6.

THERE'S NO LOVE in a vender-user mismatch. Page 63.

NEWSPAPER

FEATURE

How to select the best tools to manage LANs

By Steven Guengerich
and Judd Volino
Special to Network World

Managing corporate local-area networks has become a complicated task. And selecting the right LAN management tools is almost as difficult.

Part of the problem involves matching the management equipment to the network and to the individuals assigned to maintain it. Today's interconnected LANs use equipment from many vendors, as well as numerous protocols and a variety of topologies.

Most companies also count on their LANs to do far more than simply let users share resources. LANs now routinely support distribution of software updates, critical client/server applications and interoffice communications via electronic mail.

Naturally, the duties of LAN administrators are as diverse as the nets they maintain. The LAN management tools chosen must match the network requirements and the technical level of the staffers on the scene.

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New forum promotes use of switched digital services

Group will address equipment interoperability and other issues holding back service acceptance.

By Anita Taff
Washington Bureau Chief

RICHARDSON, Texas — About 100 carriers and equipment manufacturers voted here last week to form a new industry group whose charter is to boost user interest in switched digital services.

The group, dubbed the Switched Digital Services Applications Forum (SDSAF), will focus initially on promoting use of switched 56K bit/sec services and may also work on other services in the future, including switched T-1, switched T-3 and frame relay.

Among the factors that will be addressed by SDSAF for switched 56K bit/sec are lack of interoperability between different vendors' switches and inconsistent deployment of the technology by various carriers.

Switched digital services rely on components such as customer premises equipment, network equipment, software, long-distance transmission facilities and access services from a multitude of companies. SDSAF will take on the arduous task of getting vendors to cooperate on putting the pieces together in a consistent fashion.

Northern Telecom, Inc. and US Sprint Communications Co., who have been discussing

(continued on page 6)

AT&T wins pact to build nat'l LAN internet for IRS

Seven-year contract awarded by Treasury Dept.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — The Department of the Treasury last week awarded a seven-year contract to AT&T for networked computer systems that will automate the bulk of the Internal Revenue Service's remote offices and provide links to IRS data centers.

The IRS will install local-area networks in local and regional tax offices, and link them with a nationwide backbone net.

The installations are part of a broad information systems effort to embrace client/server computing, which will facilitate the exchange of data between the tax offices and IRS data centers.

"Today's offices cannot send to and retrieve information from the National Computer Center in Martinsburg, W.Va., where all taxpayer files are kept," said Wilson Fadely, an IRS spokesman.

The IRS declined to comment on specific network plans until expiration of a 10-day moratorium in which losing bidders have a right to challenge the contract award.

A very tall order

The Treasury Multi-User Acquisition Contract (TMAC), with a potential value of $1.4 billion, is the single largest computer systems order AT&T has ever re-

(continued on page 6)

Bank mergers test mettle of network and IS staffs

By Wayne Eckerson
Senior Editor

The merger between banking giants Manufacturers Hanover Corp. and Chemical Banking Corp. announced last week is expected to trigger a flurry of mergers among big regional banks that ultimately will leave the industry with a handful of strong, highly capitalized national banks.

But as bank executives aggressively pursue billion-dollar merger deals, network and information systems (IS) managers will be left to pick up the pieces. Often, the success of a merger will depend on how well managers consolidate the banks' networks and IS platforms.

Manufacturers Hanover and Chemical Bank expect to save $650 million annually once they have consolidated operations, which will involve closing 70 of the combined banks' 660 branch offices and laying off 6,200 workers. The annual savings will be almost double the firms' combined 1990 earnings.

"The consolidation of bank branches and technology accounts for most of the savings in any bank merger," said Jack Hancock, executive vice-president of

(continued on page 62)

Briefs

Frame Relay Forum elects officers. At its first annual meeting here last week, the Frame Relay Forum, a vendor consortium seeking to establish a common frame relay implementation standard, elected its first officers. Tom Jones of Netrix Corp. was selected as president of the group, David Walta of Northern Telecom, Inc. as vice-president, Richard Klapman of AT&T as treasurer and Robert Miller of US Sprint Communications Co. as secretary.

Hughes plans low-end switch. Hughes Network Systems, Inc., a division of Hughes Aircraft Co., plans to roll out in mid-1992 a low-end frame relay switch that will be about one-fourth the size of the company's current entry-level Integrated Packet Switch, according to Larry Mauceri, senior director of product planning. The new low-end switch will have 16 ports and will support the Simple Network Management Protocol, Mauceri said.

AT&T to make token gesture. AT&T plans to add token-ring support to the new models of its 3B2 and System 7000 mid-range computers in the fourth quarter, an AT&T Computer Systems executive said at a briefing last week. The first implementation will enable the AT&T computers to tie into 16M bit/sec token-ring nets via a Transmission Control Protocol/Internet Protocol stack, said James Clark, vice-president of mid-range, fault-tolerant and high-performance systems for AT&T Computer Systems.

Carriers flex muscles abroad. MCI Communications Corp. last week announced that it will interconnect its MCI Vnet international virtual network service to similar services in four additional countries. MCI Vnet will be connected to Italcable in Italy, Kokusai Denshin Denwa, Ltd. (KDD) in Japan, Compania Telefonica Nacional de Espana in Spain and Mercury Communications, Ltd. in the U.K. MCI is also discussing connecting Vnet to Telecom Canada's Virtual Corporate Network service.

In other international news, Sprint International announced it has signed a multiyear contract with Powszechna Kasa Oszczednosci (PKO), the largest bank in Poland, to build a packet-switched data network that will initially link about 100 bank branches in Poland and later be expanded to include more than 600 branches. The contract is estimated to be valued at $7 million.

GDC trims 10% of work force. General DataComm Industries, Inc. (GDC) last week laid off about 190 workers, 10% of its 1,900 employees. About one-half of those laid off worked in a manufacturing facility in Naugatuck, Conn., a company spokeswoman said, while the remainder came from GDC offices worldwide. GDC, which makes T-1 multiplexers and other communications equipment, attributed the layoffs to economic slowdowns in Canada, the U.S. and the U.K. Growth is still good in the rest of Europe, although it has slowed somewhat, the spokeswoman said. Company revenue has been flat at about $200 million annually for the past three or four years.

Octel buys software firm. Octel Communications Corp. last week announced the acquisition of Allegro Intelligent Systems, Ltd., a Tel Aviv, Israel-based maker of voice response systems and software. Terms of the deal were not disclosed. Octel and Allegro have worked together for the past 18 months on product development that resulted in Octel TransAct, a recently announced interactive voice response product from Octel. Allegro will become a wholly owned subsidiary called Octel Communications (Israel), Ltd.

AT&T posts profits. AT&T last week announced second-quarter revenues of $9.53 billion, up 5.4% from the corresponding period last year. Net income for the quarter reached $828 million, a 26% increase from the $657 million recorded for the similar period in 1990. More than half of that gain resulted from AT&T's sale of its share in Sun Microsystems, Inc.

The company also warned that it would take a $4 billion write-off by year end to cover expenses incurred in its recent acquisition of NCR Corp. The pretax charge would be the second largest in the carrier's history. In 1983, AT&T claimed the largest write-off ever by a U.S. company when it took $7.3 billion in special charges before divestiture. AT&T said the charges will cost the carrier $2.5 billion after taxes, absorbing most of the year's profits.

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1988 *Sprint awarded 40% of Federal Telecommunications System 2000 contract. First to deploy SS7 nationwide.* 1990 *Sprint announces the first commercial video services to the Soviet Union.*

Novell to acquire desktop OS vendor Digital Research

Merger should expand performance of NetWare.

By Caryn Gillooly
Senior Editor

PROVO, Utah — Novell, Inc. last week agreed to acquire desktop operating system vendor Digital Research, Inc. in a stock swap valued at $8 million.

The acquisition will enable both companies to augment Digital Research's existing DOS clone to handle basic Novell NetWare functions at the operating system level, which would improve the performance of NetWare on a client workstation.

Furthermore, by off-loading some functions, such as file transfer routines, to the operating system, Novell will be able to focus on providing higher level services within NetWare.

The agreement will result in a much tighter fit for NetWare with a desktop operating system, just as Microsoft Corp.'s LAN Manager is tied to OS/2.

Digital Research, based in Monterey, Calif., markets a clone of Microsoft's MS-DOS, called DR DOS, in addition to a multitasking operating system called FlexOS.

Under the terms of the agreement, Digital Research will become a wholly owned subsidiary of Novell.

According to Darryl Miller, executive vice-president at Novell, the merger will spawn a more network-ready DOS.

"Our primary goal is to enhance the networking capabilities of DOS itself, such that you'll see easier [network] installation, greater network management control and software distribution capabilities, and better accessibility to local and remote data," he said.

Miller noted that the agreement comes in response to customer demands.

"Most companies' plans have changed their strategy from having 15% to 20% of the desktops connected to 100% connected," he said.

That shift increased the need for Novell to enhance the link between NetWare and DOS.

Analysts said Novell might have preferred to tie NetWare to MS-DOS, but Microsoft's refusal to share prerelease technology made that virtually impossible. Therefore, Novell had little choice but to tie NetWare to its own version of DOS.

"Customers have felt [the disjointed NetWare and MS-DOS development] over the years," said Cheryl Currid, president of Currid & Co., a consulting firm based in Houston. "Particularly when new releases of NetWare came out and there were slight incompatibilities with MS-DOS."

Novell also could have developed its own operating system, but, according to Miller, the purchase of Digital Research filled the need immediately.

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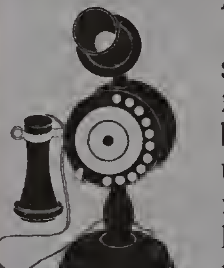
We want to hear from you.



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OS/2 future clouded by fragmentation of backers

Second in a three-part series examining trends in desktop operating systems.

By Caryn Gillooly
Senior Editor

Of the most popular desktop operating systems in use — Unix, DOS and OS/2 — the latter is the one with the most uncertain future.

Today, there is one version of OS/2: OS/2 1.3 from IBM. But by the end of the year, IBM is expected to announce Version 2.0, and within 12 months, Microsoft Corp. is scheduled to release Version 3.0.

Although this may make it sound like IBM and Microsoft have carefully crafted a viable upgrade path for OS/2, that is not the case. IBM's OS/2 2.0 will be based on a different operating system kernel than Microsoft's Version 3.0.

Further clouding OS/2's future is IBM's tentative agreement with Apple Computer, Inc. to develop a new object-oriented desktop operating system, code-named Pink, that would supersede OS/2.

"The whole question of OS/2 is up in the air right now," said Jamie Lewis, vice-president at Clarke Burton Corp., a consulting firm based in Salt Lake City. "At this point, there's no longer *an* OS/2."

The question is relevant to users because future desktop operating systems will be much more closely integrated with the network operating system.

"There's no question that some basic network services will be more intrinsic to the desktop," Lewis said. "There will always be a need for a high-performance back end [such as Novell, Inc.'s NetWare], but you'll have a lot more basic functionality built into the client operating system."

Dueling strategies

Last September, IBM and Microsoft officially parted ways when IBM said it would develop OS/2 2.0 and hand over the development of OS/2 3.0 to Microsoft.

Soon after, Microsoft announced that OS/2 3.0 would not simply be a new version of OS/2, as expected, but instead would be based on a combination of Microsoft Windows and DOS.

The product, Windows New Technology (NT), will be based on a 32-bit architecture, run on machines based on either Intel Corp. or Reduced Instruction Set Computer (RISC) microprocessors and support applications developed for DOS, OS/2 and Portable Operating System Interface X (POSIX) environments.

For users that want to use OS/2 or develop applications in an OS/2 environment, Microsoft said it will sell an OS/2 application program interface bundled with the product and call that package OS/2 3.0.

Strangely enough, Microsoft's Windows NT does not sound very different from IBM's upcoming OS/2 2.0. This operating system will also have a 32-bit architecture and will be able to run DOS, OS/2 and Windows applications.

Unfortunately, it is difficult to compare the functionality of OS/2 2.0 and Windows NT because Microsoft has yet to demonstrate the latter.

Because IBM will have OS/2 2.0 out by year end, the offering might have been the more logical choice for users looking to move up from DOS. But the recent Apple-IBM agreement has raised questions about IBM's intentions.

Since announcing the Apple agreement, IBM has stressed that it is committed to OS/2 and will continue to enhance the product. But the vendor has also stated that Pink will be the next step after OS/2, and this may make some users rethink their migrations plans.

"The fragmentation hurts OS/2. It will help keep DOS where it is and will mean more people will go out and buy [Microsoft] Windows" to use with DOS, Lewis said. "DOS will be with us for a long, long time." ◻

Vendor group to test X.500 E-mail directory capabilities

By Bob Brown
Senior Editor

SAN FRANCISCO — A group of electronic mail service providers last week said it will launch an X.500 pilot program designed to speed the establishment of a universal public directory service for E-mail users.

Members of the North American Directory Forum (NADF) said the development of an X.500 directory of E-mail addresses would let users locate addresses as easily as finding telephone numbers via directory assistance. Customers on one carrier's network today cannot search for addresses of users on other nets.

The pilot program, scheduled to begin early next year, will be designed to test interaction among the E-mail directories operated by various public network providers belonging to the NADF.

The NADF is a consortium of domestic and Canadian E-mail network carriers formed last year to discuss operational, commercial and technical issues involved in implementing a universal E-mail directory based on the CCITT X.500 Series of Recommendations. NADF members, which include AT&T, BT North America, Inc., IBM and Sprint International, will serve as users of the X.500 pilot network.

"Proprietary directories have served the carriers and their customers quite nicely up to now," said Gary Rowe, core services director for AT&T EasyLink Services and AT&T's representative to the NADF. But the advent of X.400, which provided for the interconnection of public and private nets and enabled users to perform interenterprise messaging, is forcing the move to X.500 directories.

In recent months, the NADF has defined guidelines for what an X.500 directory should look like, setting the foundation for the pilot program, Rowe said.

Among the areas to be explored during the test are various techniques for updating information in a distributed directory environment, testing interaction between private user and public network directories, and controlling access to the directory — one of the group's more serious implementation challenges, he explained. The pilot will also let carriers evaluate performance issues involved with address searches.

Detailed goals of the pilot are scheduled to be finalized by year end and a working group is being established to head up that effort, said Ted Myer, forum cochairman and a principal with Rapport Communication, a Washington, D.C. consulting firm.

"Nobody has really ever at-

(continued on page 61)

PictureTel intros low-cost videoconferencing systems

Offers market's first black-and-white model.

By Bob Brown
Senior Editor

PEABODY, Mass. — PictureTel Corp. last week slashed by 41% the entry price for buying into videoconferencing with the unveiling of two new low-cost systems, including the market's first black-and-white offering.

PictureTel executives hope the two new models for its existing System 4000 line, priced at $19,900 and $24,900, will appeal to customers that previously could not afford videoconferencing. The company is also targeting the products at existing customers who want to expand their video networks.

Analysts said the products could trigger market price competition given the fact that the previously lowest priced videoconferencing systems sold for between $35,000 and $40,000.

"It'll be interesting to see how the competition reacts," said Tim McElgunn, associate editor/analyst at Datapro Research Group, a Delran, N.J., research firm. "[$20,000] is a pretty attractive number for a lot of [users]. The price brings this product down to a new market level."

PictureTel's Model 20 Administrator System supports full-motion black-and-white video transmissions and costs $19,900, while the similar Model 100 Professional System supports color video and costs $24,900.

Both systems, which will be available in two months, feature a 20-in. monitor and include PictureTel's proprietary echo-cancellation algorithm, dubbed Inte-

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Correction: The story "House waffles over two RBHC manufacturing bills" (*NW,* July 15) incorrectly identified Michael Birck. He is chairman of the Telecommunications Industries Association in Washington, D.C.

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Bytex

Fleet/Norstar to link 900 offices with VSAT net

By Wayne Eckerson
Senior Editor

PROVIDENCE, R.I. — Fleet/Norstar Financial Group, Inc. last week said it will build a very small aperture terminal satellite network to link 900 branch offices to its main data center in Albany, N.Y.

The VSAT net, which will be built by AT&T Tridom, is expected to save the financial services firm more than $5 million during the next five years in local access and line costs, according to Michael Zucchini, executive vice-president and chief information officer. Terms of the deal with AT&T Tridom were not disclosed.

Besides the cost savings, Fleet/Norstar decided to go with VSATs because, compared to terrestrial lines, the technology is more reliable and makes it easier to add new branch offices, Zucchini said.

After completing a 10-month pilot test using VSATs to link 30 branch offices to the Albany data center, Zucchini said, "Everything AT&T [Tridom] told us about VSATs was true. We were very impressed with the [network's] reliability." AT&T Tridom guarantees 99.5% or better uptime.

Work on the the full-scale VSAT network will begin this month, and the project is scheduled for completion next spring.

The net, which will support speeds of 56K bit/sec or less, will replace low-speed leased lines connecting 600 Fleet/Norstar branch offices in Connecticut, Maine, New Hampshire, New York and Rhode Island to the data center. In addition, the network will support 300 branch offices formerly owned by the Bank of New England, which Fleet/Norstar acquired in a $625 million takeover deal that was finalized last week.

The VSAT net will support the bank's automated teller machines and workstations used by bank tellers and customer service representatives to execute transactions such as withdrawals, deposits, customer account lookups and other customer service activities.

The branch offices communicate with the data center using IBM Systems Network Architecture Synchronous Data Link Control protocols, while the ATMs use Binary Synchronous Communications protocols. In the future, Fleet/Norstar expects to support local-area network traffic using X.25 protocols, an AT&T spokesman said.

In addition, the VSAT network will support burglar alarms, which will be routed to the data center and back to local police surveillance centers. Eventually, it will support videoconferencing, Zucchini said.

Under the contract, AT&T Tridom will install a private hub earth station on the roof of Fleet/Norstar's operations center

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UN-FRACTIONAL T1

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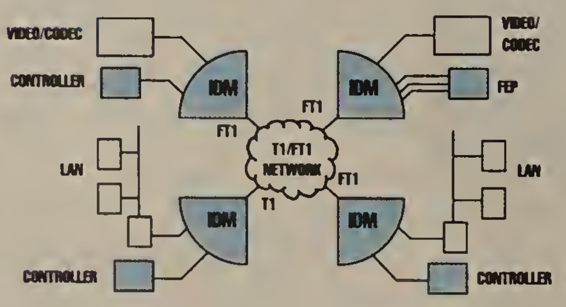

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New forum promotes switched services

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ways to promote switched services for more than a year, have been the driving force behind the group.

Companies that attended the meeting last week and expressed interest in joining SDSAF include Ascend Communications, Inc., AT&T, BellSouth Corp., GTE Telephone Operations, MCI Communications Corp., Motorola/Codex Corp., Newbridge Networks, Inc., Pacific Bell, Southwestern Bell Corp., Timeplex, Inc., Teleos Communications, Inc., United Telecommunications, Inc. (US Sprint's parent company), US West, Inc. and VideoTelecom, Inc.

Although the Big Three long-distance carriers all offer switched 56K bit/sec services, users remain largely unaware of these offerings, according to Bernie Schneider, SDSAF's president and director of product management at Sprint Data Group.

In order to attract users, the forum will help develop switched 56K bit/sec applications and ease the implementation of the service as much as possible, he said.

Problems that the SDSAF will be working to resolve include a lack of compatibility in local carrier technology and network architectures; the lack of interoperability among long-distance carriers' services; questions about interconnecting switched 56K bit/sec and Integrated Services Digital Network services; and the creation of procedures to deal with the unpredicatable switched digital traffic loads.

In terms of applications, switched 56K bit/sec has been used largely as a backup service for private lines, but forum attendees said the service would work well for videoconferencing, facsimile and the linking of local-area networks.

Although the group is trying to foster an alliance among a somewhat uneasy group of competitors, several attendees said they believed that cooperation was the only way to push the switched 56K bit/sec market.

"I like to think about making the pie bigger because then everyone gets a bigger piece of the pie," said Walter Suski, district manager for AT&T Switched Digital Services.

He pointed out that the only way to make that happen is for vendors to put all of the pieces together for customer applications.

"Switched data isn't like voice," he said. "With switched data, you have to sell an application — you have to show customers how all of the pieces go together. You can't expect customers to do it themselves."

Martin Burack, senior manager of data services marketing at MCI, agrees there are technical issues that need industry cooperation to resolve. "The need for [switched 56K bit/sec] isn't quite here yet and neither is the capability, so there have to be some risks taken on both sides," he said.

Burack noted that some of the interoperability requirements sought by switched 56K bit/sec vendors and users exceed what is available with some voice services today. For example, virtual private network services are not interoperable.

Glenn Hall, director of access management at US Sprint, said that once carriers successfully iron out an interoperability plan for switched 56K bit/sec services, the market should take off.

"Without interoperability, we're in a real struggling industry," he said. "When you get the interoperability piece in place, you get rid of some of that high-tech reluctance of users." ▣

AT&T to build nat'l LAN internet for IRS

continued from page 2

ceived. The contract will be the basis for all IRS network purchases during the next seven years. Other Treasury agencies, such as the U.S. Customs Service, will have the option of purchasing equipment and services through the TMAC contract as well.

Fadely said 120,000 IRS employees at 64 district offices, numerous satellite offices, 10 nationwide taxpayer service centers and seven regional offices are not fully networked today.

Only the 10 taxpayer service centers currently can access the Martinsburg mainframes by means of the IRS' X.25 packet-switching network, Fadely said.

Under the TMAC award, AT&T will deliver as many as 3,200 Reduced Instruction Set Computer-based Pyramid Technology Corp. MISe servers, about 50,000 AT&T Intel Corp. 80386-based workstations for use as LAN clients and an indefinite number of LANs, bridges, routers, multiplexers, and other network products and peripherals, such as printers.

Under the contract, AT&T will supply an Integrated Applications Suite of applications it developed based on off-the-shelf data base, financial and accounting software, as well as text-search and retrieval packages from multiple vendors.

AT&T teamed up with two primary subcontractors, Pyramid and Computer Sciences Corp. (CSC), in winning the deal over separate teams led by IBM and Lockheed Corp., which are both weighing decisions on whether to protest the award.

AT&T will assist each IRS office in designing the LAN and data base system to fit specific needs, according to Jim Leto, AT&T Federal Computer Systems vice-president and general manager. He said CSC will perform some systems integration functions, including the specific data base design.

The typical design envisioned under TMAC will feature AT&T workstations networked to a Pyramid MISe server, which would run a distributed data base application.

The IRS already uses about 100 total of the MISe servers and older Pyramid 9000 series computers residing on Transmission Control Protocol/Internet Protocol-based Ethernets, according to Ed Scott, Pyramid's executive vice-president.

Fadely and officials from Pyramid and CSC declined to offer details about the wide-area network links to each of the IRS offices, but sources said the IRS is interested in preserving its Consolidated Data Network, a private X.25 packet-switched net.

Under federal law, new network purchases have to comply with the Government Open Systems Interconnection Profile (GOSIP). In order to satisfy the GOSIP requirement, AT&T will install networks that support a dual-protocol stack of TCP/IP and OSI protocols, providing a migration path from existing TCP/IP nets, said Tom Nixon, AT&T's program manager for TMAC. ▣

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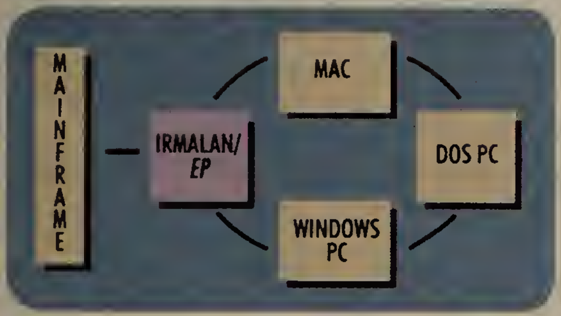

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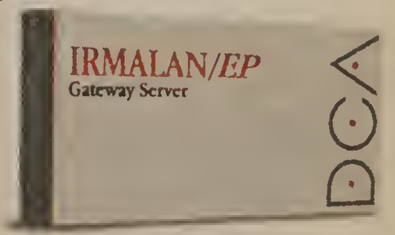

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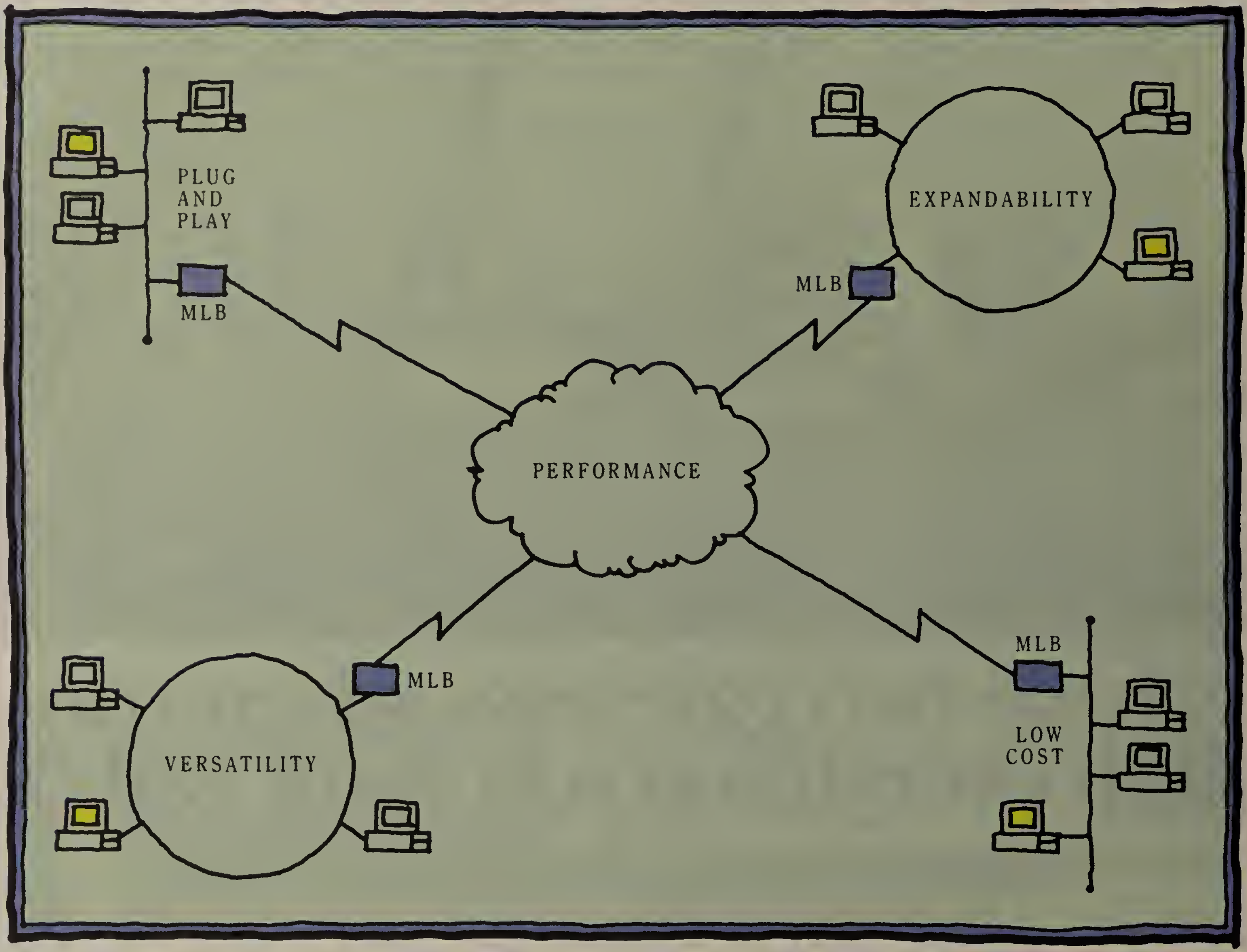

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

> "If we didn't get support from the CPE vendors, the viability of [Switched Multimegabit Data Service] would be significantly diminished."
>
> **Steve Starliper**
> SMDS project manager
> Pacific Bell
> San Ramon, Calif.

People & Positions

Stanley Cramton last week was named vice-president and managing director of USSR enterprises and European networks at **US West, Inc.'s US West Diversified Group.**

In this newly created position, Cramton will be based in Moscow and be responsible for US West operations in the Soviet Union. He will also oversee US West network system development activities in Europe.

Previously, Cramton was director of business development for US West International in Washington, D.C., where he worked on US West projects in the Soviet Union. Those ventures included the Trans-Soviet Line project and the cellular telephone systems in Leningrad and Moscow.

Howard Frank, former chairman of the board of directors at Fairfax, Va.-based **Network Management, Inc. (NMI),** has resigned that position to become senior fellow at the University of Pennsylvania's Wharton School of Business.

At the Wharton School, he will conduct research into the impact of networking on organizational behavior and develop new courses in information studies.

Frank will be replaced by **Francis Dramis,** who will continue to serve in his current capacity as NMI's president and chief executive officer. ◪

DSC took steps to improve quality before CCS7 outages

Firm recently reshuffled staff to attack problems.

By Ellen Messmer
Washington Correspondent

PLANO, Texas — DSC Communications Corp.'s admission that faulty software and inadequate testing contributed to two recent Common Channel Signaling System 7 outages comes on the heels of an internal effort to improve quality control.

One analyst last week said DSC has been thrust into the national spotlight at a time when the company had just completed an executive reshuffling aimed at tightening quality control.

Achmad Chadran, research manager at consultancy Northern Business Information/Datapro, said DSC, a maker of a wide array of network equipment, has been hampered by quality control problems in the past.

Some DSC customers had canceled orders for cross-connect equipment because of software problems, he added.

Chadran said DSC has a history of bowing to shareholder pressure by shipping product before it is adequately tested in order to rack up sales before the end of a financial reporting period.

"DSC got in the habit at the end of the reporting period of pushing machines off the assembly lines," Chadran said. A DSC spokesman declined comment.

New appointment

Two months ago, the company appointed Frank Perpiglia vice-president of technology and product development, replacing Gunnar Korpinen, formerly senior vice-president of the technology group. Chadran viewed the appointment as an effort by DSC to tighten quality control.

The DSC spokesman declined to establish a direct link between the quality control issue and Perpiglia's appointment to replace Korpinen, who will remain as a consultant to the company.

According to the spokesman, the company was determined to overcome the events of the past few weeks.

"Frank [Perpiglia] will be doing what he can to make sure we do not have a repeat of what happened," he said.

Perpiglia recently told the House Telecommunications Subcommittee that last April DSC failed to adequately test a switching software upgrade it shipped to its customers.

The lack of testing "was a key contribution to the problem,"

(continued on page 10)

INDUSTRY BRIEFS

MCI reports record revenue. MCI Communications Corp. last week posted revenue of $2.098 billion for its second quarter, an 11% jump over revenue for the corresponding period last year.

According to Bert Roberts, MCI president and chief operating officer, the carrier is pleased but remains cautious in light of economic conditions. MCI reported earnings of $129 million, compared to $170 million for the same quarter last year.

US Sprint parent posts slight gains. United Telecommunications, Inc., the parent company of US Sprint Communications Co., last week reported second-quarter revenue of $1.36 billion, compared to $1.24 billion for the corresponding period last year.

Operating income was $73 million, compared to a loss of $42 million in the second quarter of 1990. United Telecom said US Sprint's minutes of use grew 14% over the same period a year ago.

Revenue from United Telecom's local operations were $696 million for the second quarter ended June 30, up slightly from $684 million for the second quarter of 1990.

3Com, Make Systems ink deal. 3Com Corp. last week said it has entered into an agreement with Make Systems, Inc. of Mountain View, Calif., in which Make Systems will add data on 3Com's NetBuilder bridge and router line to its Netool decision support software. Netool enables users to simulate

(continued on page 10)

Routers on trial

Vendors cooperating in SMDS trials

RBHC	Router vendors
Ameritech	Not available
Bell Atlantic Corp.	QPSX Systems, Ltd.
BellSouth Corp.	Wellfleet Communications, Inc. 2 others (not available)
Nynex Corp.	Cisco Systems, Inc. Wellfleet
Pacific Telesis Group	Advanced Computer Communications Cisco Ungermann-Bass, Inc. Wellfleet
Southwestern Bell Corp.	Cisco Wellfleet
US West, Inc.	Not available

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: REGIONAL BELL HOLDING COMPANIES

RBHCs enlist router makers in SMDS tests

Carriers hope to convince users interoperability issues will be resolved once new offerings bow.

By Bob Brown
Senior Editor

Leading router suppliers are teaming up with regional Bell holding companies in a series of Switched Multimegabit Data Service (SMDS) trials to assure users their equipment will work with the services when they become tariffed offerings.

Cooperation between the router makers and the RBHCs should go a long way toward convincing customers that interoperability issues relating to SMDS have been addressed, giving users an effective service to link LANs over local or regional distances, industry observers said.

"The CPE industry sees the potential for SMDS to equalize the speeds between wide-area networks and local-area networks," said David Yates, a senior product manager at Wellfleet Communications, Inc., a router maker in Bedford, Mass. "In the past, the wide-area network has been a bottleneck" for linking 10M or even 100M bit/sec LANs.

SMDS is a metropolitan-area data networking service that allows users to transmit data at speeds up to 45M bit/sec on a switched basis for peak loads. Therefore, users pay only for bandwidth used, as opposed to dedicated lines for which users must pay a fixed rate.

Users typically will employ a router to exchange LAN traffic with SMDS nets and be guaranteed that certain routers will work with specific SMDS services based on current interoperability trials.

Although existing routers lack SMDS interfaces, major bridge and router vendors have pledged to support SMDS in future software upgrades based on information gathered during the RBHCs' SMDS interoperability trials.

To date, SMDS has been largely viewed as an RBHC-backed initiative and overshadowed by frame relay, another transmission alternative that customer premises equipment vendors and users have been quick to embrace.

"We've got to work with other vendors to verify SMDS as a viable network service," said Steve Starliper, SMDS project manager at Pacific Bell in San Ramon, Calif. "We don't want the marketplace to perceive SMDS as a telco-invented service."

> "We don't want the marketplace to perceive SMDS as a telco-invented service."

▲▲▲

Caroline Cranfill, SMDS project manager within the Science and Technology Department of BellSouth Corp. in Atlanta, agreed.

"By building SMDS interfaces, vendors like Cisco [Systems, Inc.] and Wellfleet are sending users a message that SMDS is a useful service," she said. "If we couldn't get [these vendors] to build SMDS interfaces, there would be no point in us offering these services."

Cisco and Wellfleet, two of the top players in the router market,

(continued on page 10)

RBHCs enlist router makers in SMDS tests

continued from page 9

have been among the most active SMDS supporters in the customer premises equipment market, but observers said that other vendors are expected to support the technology as well. Since SMDS service rollouts will not be in full swing for at least a year, users shouldn't be concerned if a particular router vendor is not the first to deliver an SMDS interface, Starliper said.

Both Cisco and Wellfleet have pledged to include SMDS interfaces in the next software upgrade to their products later this year. They are also working with several RBHCs, including Nynex Corp., Pacific Bell and Southwestern Bell Corp., to test interoperability between their routers and the carriers' SMDS offerings (see chart, page 9). All of the RBHCs are still in the process of testing SMDS switches, applications and customer premises equipment, including routers.

Earlier this month, for example, BellSouth announced it was conducting trials based on Wellfleet routers. The tests include demonstrating interoperability between the Wellfleet routers and BellSouth's SMDS-compliant central office switches. Separately, BellSouth will use SMDS-compliant Wellfleet gear to connect about 300 LAN users at BellSouth sites in Atlanta, Birmingham, Ala., and Nashville. These LANs will be linked over SMDS lines running at 1.5M and 45M bit/sec.

Pacific Bell has been testing routers from Advanced Computer Communications, Cisco and Wellfleet in multiuser, multivendor SMDS network trials. These trials have tested the performance of bridges and routers when handling assorted traffic loads and addressing schemes as well as interoperating with other vendors' routers.

While both the RBHCs and the router vendors have been pleased with the test results so far, issues related to the actual commercial deployment of SMDS services could be the major hurdle.

"The real promise of SMDS will depend largely on the attractiveness of the carriers' SMDS tariffs," Yates said. ◘

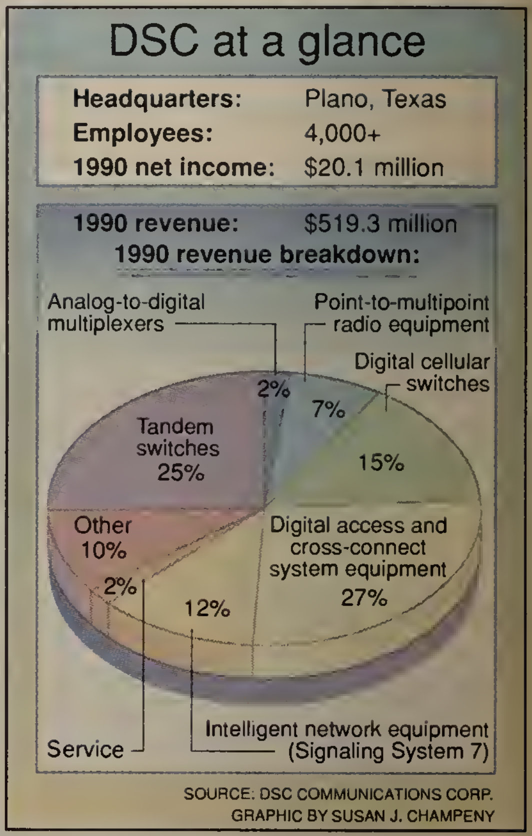
DSC tried to improve quality before outages

continued from page 9

Perpiglia admitted. He explained that the software was missing three lines of code, which caused the signal transfer points to malfunction under minor stress conditions.

The consequence was a series of network crashes in past weeks for two DSC customers, Bell Atlantic Corp. and Pacific Telesis Group. Both Bell Atlantic and Pacific Telesis said DSC's remedial actions have brought the situation under control ("BOCs divulge genesis of CCS7 crashes," *NW*, July 15).

But Bell Communications Research, which is heading the investigation task force, told Congress it intends to perform intensive testing on the DSC equipment in conjunction with AT&T, Northern Telecom, Inc. and the Bell operating companies to duplicate the outage conditions until engineers are satisfied the cause of the failures has been found. ◘



SOURCE: DSC COMMUNICATIONS CORP.
GRAPHIC BY SUSAN J. CHAMPENY

Industry Briefs

continued from page 9

network configurations and traffic conditions, thereby determining new performance parameters. Netool already offers data on Network Equipment Technologies, Inc., Newbridge Networks, Inc. and Timeplex, Inc. T-1 equipment.

MFS objects to PacBell deal. Oakbrook Terrace, Ill.-based alternative access carrier Metropolitan Fiber Systems, Inc. (MFS) last week filed objections with the California Public Utility Commission regarding Pacific Bell's proposed interconnection settlement agreement with Teleport Communications Group.

According to Royce Holland, MFS president and chief executive officer, the interconnection agreement should be rejected because it lacks any cost justification for the proposed rates.

Holland said the rates proposed by Pacific Bell are four times higher than rates MFS negotiated with New York Telephone Co. for comparable interconnection in New York City and seven times higher than rates MFS has negotiated for comparable interconnection with Illinois Bell Telephone Co. in Chicago. ◘

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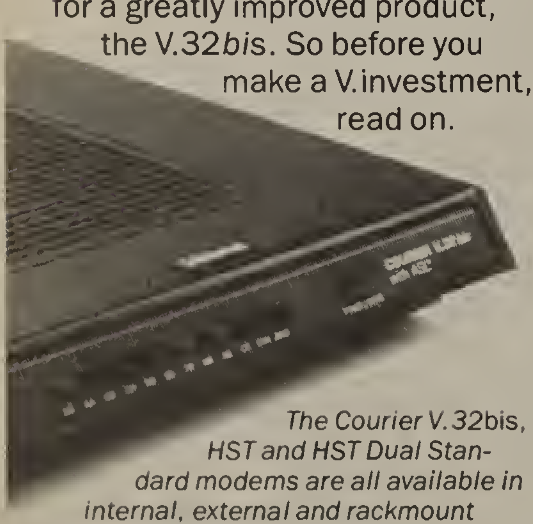

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TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

United Telecommunications, Inc., which began in 1899 as a small telephone company in Abilene, Kan., recently installed its four millionth access line. The company now operates local carriers in 17 states and owns US Sprint Communications Co.

Carrier Watch

Bell Communications Research last week said it will soon offer testing of Switched Multimegabit Data Service (SMDS) gear to ensure product interoperability.

Bellcore made the announcement at a meeting of the SMDS Interest Group at the Communication Networks West trade show in San Francisco. The interest group includes representatives from the seven regional Bell holding companies, independent local exchange carriers and various equipment vendors.

The research organization, which is owned by the RBHCs, said it will compare vendors' SMDS interface protocols to Bellcore generic requirements and industry standards.

SMDS is an emerging public packet-switched service that will support speeds up to 45M bit/sec. The first technical audits of SMDS equipment will be for equipment supporting T-1 speeds of 1.54M bit/sec, and they could begin during the first quarter of next year. Testing at the 45M bit/sec T-3 rate should follow soon after.

The first cross-country Integrated Services Digital Network call using multiple carriers and different network switches was made last week, according to Bell Communications Research, BellSouth Corp., Southwestern Bell Telephone Co. and US Sprint

(continued on page 12)

GTE to bring T-1 network optimizer tool to market

Product checks least cost route for entire net.

By Wayne Eckerson
Senior Editor

WALTHAM, Mass. — GTE Laboratories, Inc. last week said it plans to commercially release a network design tool originally developed for in-house use that optimizes private T-1 networks for cost and reliability.

GTE Labs developed its Computer-Aided Planning for T-1 Networks (CAPT1N) almost a year ago to enable the carrier's sales force to offer net design and planning services to customers with T-1 networks.

Currently, GTE Labs is negotiating with a third party to license the product, which will then be made publicly available.

CAPT1N differs from most network design tools because it uses mathematical modeling techniques to determine least cost routing configurations for an entire T-1 network, according to Rita Vachani, senior member of the technical staff at GTE's Telecommunications Research Laboratory here who helped develop the product.

By contrast, most net design tools calculate the cheapest way to route traffic between each pair of nodes on a network rather than look at the network configuration as a whole. While the tools identify least cost routing between nodes, they may not identify the net configuration that offers the lowest overall cost, Vachani said.

GTE developed CAPT1N to run on Digital Equipment Corp. VMS or Unix hosts and on personal computers using DOS and Microsoft Corp. Windows 386. The personal computer package uses graphics to display network configurations and is geared to small to midsize net configurations. The host version can perform optimizations for nets of any size.

To use CAPT1N, users must first enter network traffic figures and tariff data into tables in the software. In order to access tariff data, users must write programs that enable CAPT1N to download tariff data from commercially available data bases. Otherwise, users would have to manually enter the information.

The personal computer version of CAPT1N graphically displays all net nodes and T-1 circuits in a user's network, as well as the estimated monthly usage charges under that configuration. Pull-down screens enable users to check available capacity and the number and speed of channels being used within any circuit.

(continued on page 12)

WASHINGTON UPDATE

BY ELLEN MESSMER

Hollings bill targets unsolicited calls. Sen. Ernest Hollings (D-S.C.) has introduced legislation (S. 1462) that would outlaw all computerized autodial telephone calls made to businesses and residences.

The bill would also prohibit the transmission of facsimiles except under the condition that the targeted recipient has given prior approval. The first congressional hearing for the new Hollings bill is set for Wednesday.

Subcommittee hears from 900-number reps. At a hearing last week to discuss two pending Senate bills to regulate the $1 billion-a-year 900-number services industry, the Senate Communications Subcommittee heard from industry representatives who criticized the proposed regulations.

Blake Barker, executive vice-president of USA Today Information testified on behalf of the National Association of Information Services and urged Congress not to adopt a new rule requiring information providers using 900 numbers to register with the Federal Trade Commission (FTC).

The FTC registration requirement is contained in Sen. Daniel Inouye's (D-Hawaii) bill, The Telephone Consumer Assistance Act (S. 1166), but not in the similar bill, The 900 Services Consumer Protection Act of 1991 (S. 471), introduced by Sen. John McCain (R-Ariz.).

(continued on page 12)

RBHC ISDN deployment plans

Company Year	Switches equipped with ISDN (in thousands)	Lines with access to ISDN (in thousands)	Percentage of total lines
Ameritech			
1991	NA	2,200	15%
1994	600	14,000	87
Bell Atlantic Corp.			
1991	275	6,900	38
1994	450	17,100	90
BellSouth Corp.			
1991	121	3,100	17
1994	354	10,500	52
Nynex Corp.			
1991	29	1,900	NA
1994	80	4,100	26
Pacific Telesis Group			
1991	88	4,100	30
1994	175	7,500	50
Southwestern Bell Corp.			
1991	51	1,127	8.8
1994	167	3,905	32.2
US West, Inc.			
1991	130	3,000	23
1994	203	7,300	51

NA = Not available

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: *NETWORK WORLD*

Carriers, vendors vow to unite on ISDN

RBHCs discuss plans to increase ISDN support, team up with equipment makers, software firms.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Acknowledging that carriers and vendors have failed to cooperate enough to give Integrated Services Digital Networks a reasonable chance of market success, the RBHCs sponsored a forum here earlier this month to lay out plans they hope will bring the industry together.

Virtually every speaker — representing hardware manufacturers, software developers and local and long-distance carriers — agreed that widespread deployment of ISDN has been mired in an endless waiting game. The regional Bell holding companies are hesitant to deploy ISDN technology until sufficient equipment and applications exist to ensure user acceptance.

Meanwhile, hardware and software manufacturers say they won't invest millions of dollars in new products until they are sure the carriers are committed to providing the transmission platform. Users, on the other hand, wonder if it is wise to implement ISDN given the mixed signals they have received from suppliers.

Dennis Hayes, president of Hayes Microcomputer Products, Inc., a data communications pioneer, summed up the exasperation many have felt over the slow movement of ISDN.

"The peak of expectations for the promise of ISDN became, after a few years, the valley of disappointment," Hayes said.

He attributes much of the problem to the wide differences in corporate culture between telephone companies and other technology firms.

"The telephone companies were working at what they thought was breakneck speed to make the biggest change that has ever been made in the telephone network. Yet the computer industry became frustrated and began to wonder why it was taking so long," Hayes said.

About 500 people representing firms ranging from the three major long-distance carriers to IBM and Visa International, Inc. attended the two-day conference. At the forum, RBHC officials said that despite industry doubts, they are completely committed to ISDN and vowed to put their resources into an effort to have widespread ISDN deployment by 1994.

RBHC officials vowed to open their test labs to application developers and strike strategic partnerships with outside firms to make sure the equipment and

(continued on page 12)

AT&T's Tariff 12 users
Virtual Telecommunications Network Service

Option	Customer	Minimum service period (Years)	Total contract value (Millions of dollars)
1.	Dupont	5	$90 to 100
2.	Ford	5	129
3.	American Express	5	233
4.	American Airlines	5	167
5.	Federal Express	3	42
6.	Allied Signal	4	29
7.	GE	5	158
8.	First Chicago	5	23
9.	Combustion Engineering	3	11
10.	GE	5	11
11.	Prudential	5	200
12.	PaineWebber	5	57
13.	Kemper Financial Services	5	45
14.	J.C. Penney	5	185
15.	MasterCard	3	21
16.	Unisys	5	100 to 200
17.	RJR Nabisco	3	24
18.	James River	5	22
19.	National Semiconductor	3	12
20.	Citibank	3	41
21.	Dupont	3	54
22.	Aetna	3	35
23.	Chemical Bank	3	17
24.	EDS	5	44
25.	Hertz	5	55
26.	USAir	5	124
27.	Primerica	3 to 5	53 to 89
28.	Litton	3 to 5	19 to 32
29.	Dupont	3 to 5	52 to 87
30.	Cigna	5	104
31.	Marriott	5	151
32.	Colonial Penn	3	30
33.	Bridgestone/Firestone	3 to 5	22 to 37
34.	CSX	3	36
35.	Nestle	3	22
36.	Metropolitan Life	5	146
37.	Atlantic Richfield	5	24
38.	Manufacturers Hanover	3	16
39.	Wang Laboratories	3	51
40.	General Dynamics	3	16
41.	Boise Cascade	5	33
42.	Caterpillar	5	27
43.	McGraw-Hill	3	18
44.	Undisclosed	5	83
45.	Anheuser-Busch	4	15
46.	Chase Manhattan	5	55
47.	Undisclosed	3	28
48.	Xerox	5	126
49.	Goldman Sachs	3	18
50.	Security Pacific	3	25
51.	Multiuser option*	3	313
52.	Undisclosed	3	19
53.	Undisclosed	3	35
54.	Undisclosed	3	14
55.	United Technologies	3	43
56.	National Data	3	21
57.	Chevron Technology	5	59
58.	Pepsico	3	12
59.	Hyatt	3	27
60.	Avis	5	33
61.	Undisclosed	4	17
62.	Undisclosed	3	15
63.	Coors	3	3
64.	Undisclosed	3	45
65.	Farmers Insurance	3	21
66.	Computer Language Resources	3	7
67.	Textron	3	21
68.	ITT/Sheraton	3	38
69.	Hospital Corp. of America	3	6
70.	Undisclosed	3	32
71.	The Equitable	3	21
72.	Undisclosed	3	47
73.	Marine Midland Bank	3	9
74.	Alexander & Alexander	5	10
75.	John Hancock	3	22
76.	Undisclosed	3	27
77.	Lincoln National	5	36
78.	Undisclosed	3	16
79.	Undisclosed	5	145
80.	Safeco Insurance	3	7
81.	Undisclosed	5	20
82.	Fleet/Norstar	5	25
83.	Wal-Mart	3	21
84.	Black & Decker	4	12
85.	C&S/Sovran	5	25
86.	Undisclosed	3	24
87.	Undisclosed	4	78
88.	Airborne Express	3	11.6
89.	The Travelers	3	42
90.	Honeywell	3	20

* Former AT&T Enhanced Private Switched Communications Service customers including Xerox, LTV, USX, Alcoa, Western Electric, Conrail, ICI Americas, PPG Industries and Quantum Chemicals.

GRAPHIC BY SUSAN J. CHAMPENEY

Vendors vow to unite on ISDN

continued from page 11

software necessary to make ISDN a viable tool for users is available within the next three years.

To underscore the extent of their commitment, the RBHCs made a point that the representatives they sent to the forum were all at or above the vice-presidential rank.

In addition to addressing the investment dilemma that has stunted the growth of ISDN, RBHC officials said they will work to solve problems such as the lack of interoperability between various switch manufacturers, lack of connectivity between ISDN switches and questions about pricing.

For example, each of the RBHCs and major switch manufacturers has committed to support a nationwide implementation of ISDN dubbed National ISDN-1. This should eliminate the types of interoperability problems that occurred in the past when manufacturers produced ISDN products with slightly different implementations of the protocol.

> The RBHCs' renewed commitment to the technology may prove to be the necessary catalyst for its advancement.
>
> ▲▲▲

Also, with the RBHCs agreeing to a uniform implementation of ISDN, hardware and software vendors can feel confident that the products they develop will work in any of the carriers' networks, as opposed to having to customize equipment for use in different regional nets.

Although there have been numerous disappointments with ISDN, the RBHCs' renewed commitment to the technology may prove to be the necessary catalyst for its advancement. In the past, many have blamed the RBHCs' lukewarm response for holding back ISDN. Even now, with the RBHCs' beefed-up commitment to the technology, the carriers have divergent deployment plans. Three of them — BellSouth Corp., Pacific Telesis Group and US West, Inc. — will have ISDN available on only about 50% of their total access lines by 1994.

Nynex Corp. will make ISDN available on only 26% of its total lines within the next three years, while Southwestern Bell Corp. will have the service available on about 32% of its total lines in that time frame.

There are reasons to believe that the RBHCs' commitment will help rejuvenate ISDN. Even though five of the seven carriers will only have ISDN available on 50% or less of their access lines by 1994, they will concentrate on metropolitan areas first, the users thought to have the greatest use for the technology.

And although there are wide variations in the deployment of Common Channel Signaling System 7 (CCS7) — the signaling technology needed to tie together switches equipped with ISDN — five of the seven carriers said at the forum they will have CCS7 linkage on 80% to 90% of their ISDN switches by 1994.

One reason the RBHCs may now be more supportive of ISDN is the increasing realization that, with about a 93% penetration rate for telephones in U.S. households, they can expect only limited growth in the number of new subscribers. Therefore, they must look to new services as a way to increase use on their networks.

Mont Williams, a vice-president at Ameritech, said the reality that the carrier must do a better job finding new services to create additional revenue growth has hit home. In a recent study commissioned by Ameritech, only 10% of users interviewed said they would consider the phone company as a source for designing and installing data applications, according to Williams.

In one category — large insurance companies — not one user listed the phone company as a potential data communications source. Users participating in the survey work in industries ranging from government to financial services to hospitals.

Washington Update

continued from page 11

At the hearing, Barker said the FTC registration requirement would serve no benefit in policing unscrupulous information providers who aim promotions at children or engage in fraud through use of 900 numbers.

Peter Brennan, chairman of the voice information services division of the Information Industry Association (IIA), told Inouye that the IIA considers the FTC registration requirement "onerous," adding that "it could have a chilling effect on audiotex as a First Amendment forum."

At the conclusion of the hearing, McCain and Inouye announced they would work to put forth one common bill to be backed by the subcommittee before Congress' August recess. A Senate legal aide said that McCain is interested in Inouye's FTC registration proposal and may back that idea.

Carrier Watch

continued from page 11

Communications Co. The ISDN call, which originated in Southwestern Bell's Advanced Technology Laboratory in St. Louis, was carried by US Sprint to a BellSouth switch in Atlanta. Central office switches from AT&T, DSC Communications Corp. and Northern Telecom, Inc. were used to support the link.

Pacific Bell recently lowered rates for its Custom 800 toll-free service by as much as $2 per hour for high-volume users. Weekday usage rates, which peak at $11 per hour for lower volume users, are now as little as $8 per hour for subscribers with 500 hours or more of calls per month and $7 per hour for users with 1,000 hours or more.

The new reduced rates apply automatically when a subscriber reaches the required thresholds. The rates only apply for calls made within Pacific Bell service areas.

GTE to bring T-1 tool to market

continued from page 11

When users execute an algorithm function, CAPT1N analyzes all possible configurations for connecting network nodes, taking into account all available bandwidth. It then graphically displays the optimal net configuration and calculates monthly usage costs.

Users then can run another algorithm that builds redundancy into the optimized network design. The algorithm determines the least expensive combination of circuits that need to be added to ensure route diversity. In addition, it calculates the total cost of the new network configuration based on predefined traffic patterns.

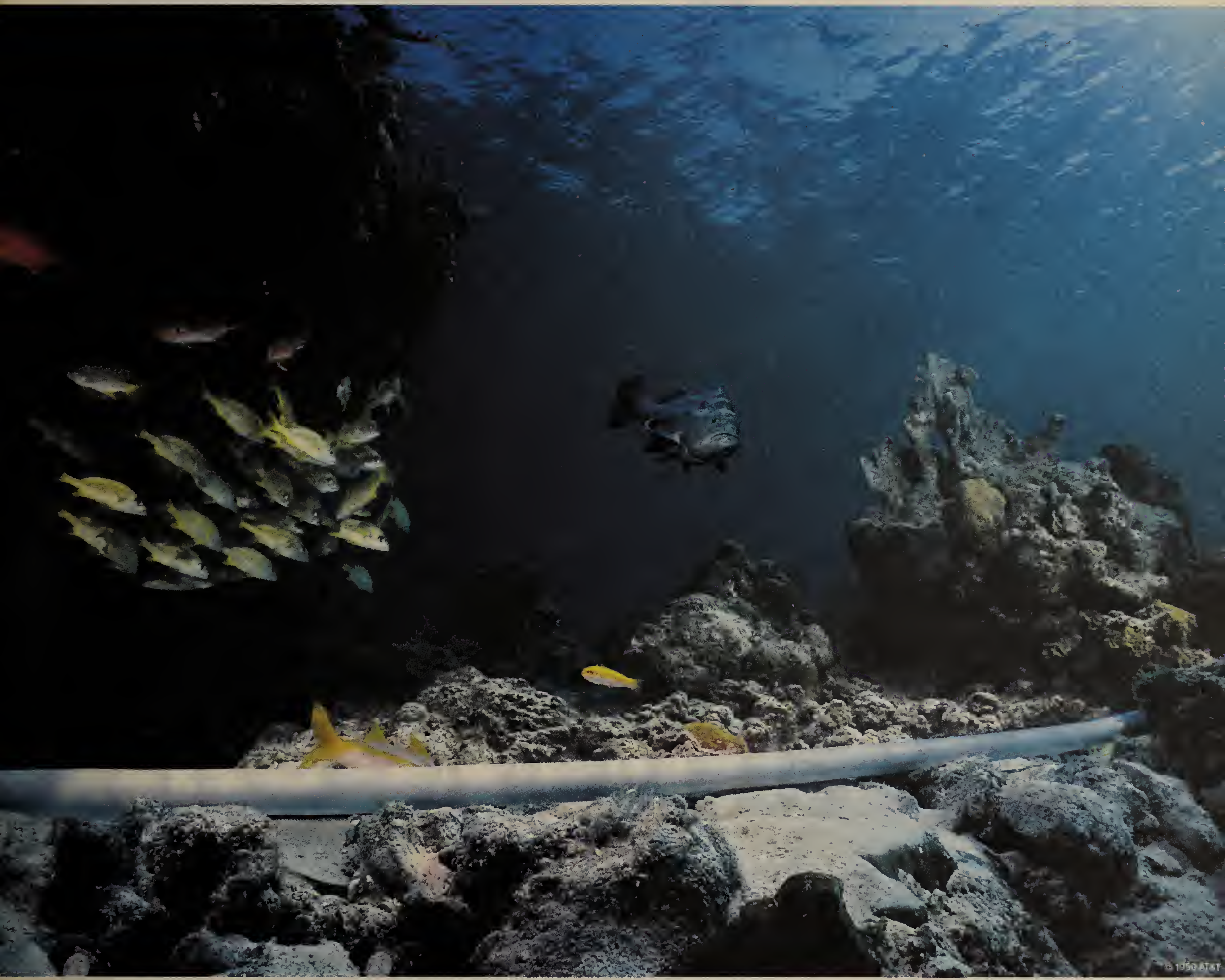
CAPT1N's algorithms assume that users have a digital access and cross-connect system or intelligent multiplexers that can be loaded with routing tables at each node. This gives users the greatest flexibility in establishing optimal routing patterns across the network, Vachani said.

CAPT1N also enables users to define a fixed number of circuits between any network nodes. CAPT1N will then reoptimize the network, keeping those circuits in place.

GTE Labs has not listed a price for CAPT1N because it develops products for GTE business units' internal use, not for commercial sale. Pricing will be determined by resellers. However, Vachani said GTE customers can call their account representatives for information about the product.

Non-GTE customers can call Vachani at (617) 466-2607 for additional information.

Without AT&T, a problem down here could sink your business.



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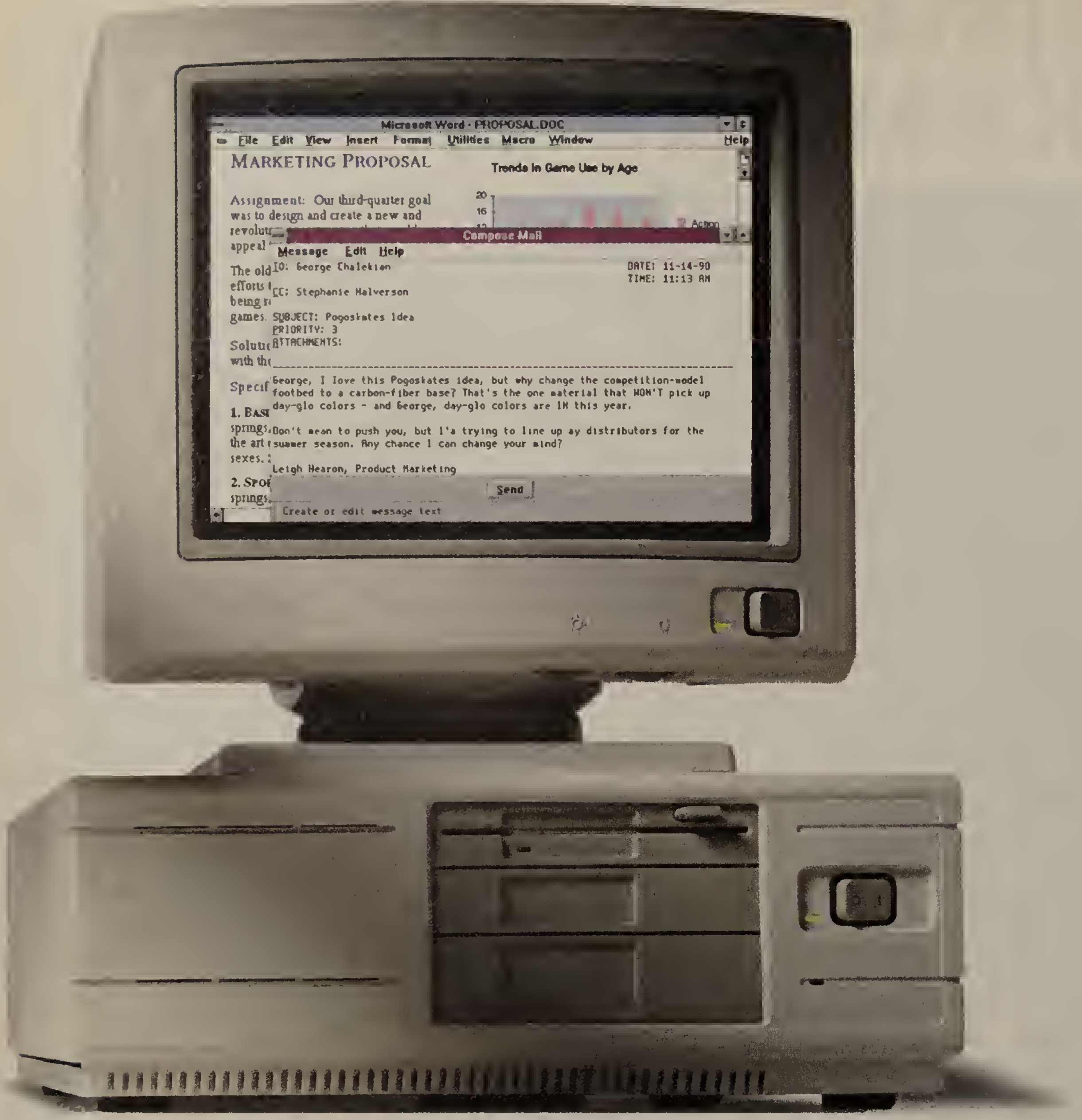
Microsoft Word - PROPOSAL.DOC
File Edit View Insert Format Utilities Macro Window Help
MARKETING PROPOSAL
Trends in Game Use by Age
Compose Mail
Message Edit Help
Send
Create or edit message text

TO: George Chalekian
CC: Stephanie Halverson
SUBJECT: Pogoskates Idea
PRIORITY: 3
ATTACHMENTS:
DATE: 11-14-90
TIME: 11:13 AM

George, I love this Pogoskates idea, but why change the competition-model footbed to a carbon-fiber base? That's the one material that WON'T pick up day-glo colors - and George, day-glo colors are IN this year.

Don't mean to push you, but I'm trying to line up my distributors for the summer season. Any chance I can change your mind?

Leigh Hearon, Product Marketing

Now anyone can g what kind of b

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MARKETING PROPOSAL

To: Leigh Hearon
Stephanie Halverson

Subject:
Pogoskates

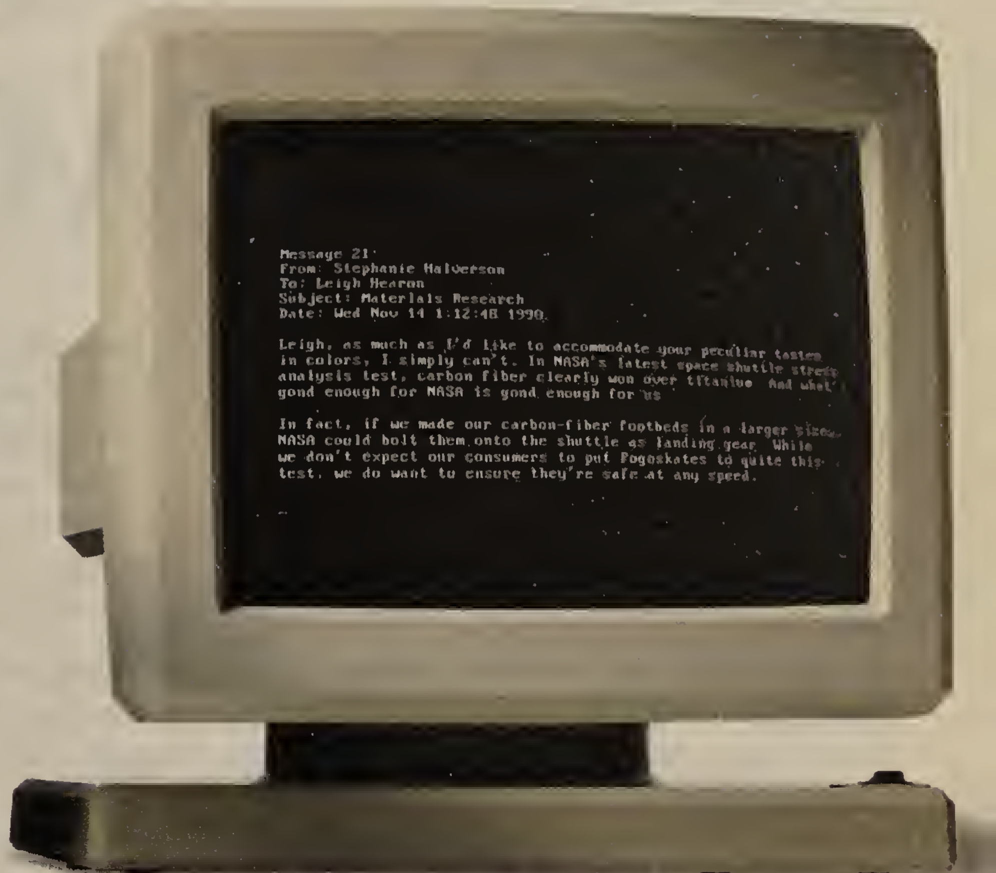
Comments
Leigh, our competition model will appeal exclusively to serious racers And believe me, they'll be much more concerned about keeping up with each other than they'll be about keeping up with the latest fashion trends So we're switching to carbon fiber It's lighter and more responsive than titanium And most important, it can take a lot of abuse

As far as meeting our original deadline goes, the change to carbon fiber shouldn't set us back at all Go ahead and line up your distributors.

George Chelekian, Product Development

2. Sport Model Aluminum footbed, top-performance urethane wheels, high-tensile springs, leather uppers SRP $125.

3. Competition Model Titanium footbed, urethane racing wheels, high-tensile



```
Message 21
From: Stephanie Halverson
To: Leigh Hearon
Subject: Materials Research
Date: Wed Nov 14 1:12:48 1990

Leigh, as much as I'd like to accommodate your peculiar tastes
in colors, I simply can't. In NASA's latest space shuttle stress
analysis test, carbon fiber clearly won over titanium And what'
good enough for NASA is good enough for us

In fact, if we made our carbon-fiber footbeds in a larger size
NASA could bolt them onto the shuttle as landing gear While
we don't expect our consumers to put Pogoskates to quite this
test, we do want to ensure they're safe at any speed.
```

et mail, no matter ox they have.

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Building a facility network requires many decisions. And none is more critical to the network's success than your choice of smart hubs.

In the interest of survival, then, here are four things you should know.

Reliability. The cost of network downtime can be astronomical in terms of lost business and decreased productivity. To survive, full-time networking is critical. With Chipcom's ONline™ System Concentrator, you can build a totally fault-tolerant facility network that switches around broken cables and failed components, and reroutes network traffic without users even knowing a problem exists.

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Manageability. A hub that merely tells you there's a problem is no longer good enough. Chipcom's ONline Network Control System has the power to reassign, balance and reconfigure, without rewiring or shutdown, to suit changing network conditions. For the first time, you control your network. Instead of the network controlling your company.

The real cost of networking. The good news is that this reliability, flexibility and manageability can actually cost your company less. To find out how, and for more information on Chipcom's ONline System Concentrator, call **1-800-228-9930.**

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DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

StrataCom, Inc. last week announced it has shipped its 1,000th IPX multiplexer frame relay port, which was installed earlier this month at WilTel. More than 28 companies have installed or ordered StrataCom's four-port frame relay interface boards, the company said.

Data Packets

Brixton Systems, Inc. of Cambridge, Mass., last week announced BrxPPP, a software package that lets users connect local and remote Sun Microsystems, Inc. SPARCstations via dial-up lines.

The software can also be used to connect two SPARCstations through a router remote to both workstations or to connect workstations on remote local-area networks.

In addition, Brixton announced Brx3770/RJE, software that lets a Unix workstation emulate an IBM 3770 remote job entry controller to support high-speed file transfers over Systems Network Architecture networks.

BrxPPP and Brx3770/RJE are both available now. Each costs $1,950.

Hewlett-Packard Co. last week announced the HP OpenView Sun SNMP Agent, which is Simple Network Management Protocol agent software for Sun Microsystems, Inc. SPARC workstations and servers that works with any SNMP management system.

The agent provides data on disk space capacity, CPU load, number of users and Ethernet statistics and automatically generates alarms when predefined conditions occur.

The agent is scheduled for availability in August. Prices range from $400 for single quantities to $100 each for orders of 1,000 or more. ◘

Gandalf tool uses SNMP, CMOT to manage Ethernets

Product also feeds data to integrated managers.

By Paul Desmond
Senior Editor

WHEELING, Ill. — Gandalf Data, Inc. last week announced a network management system that can use both Open Systems Interconnection protocols and the Simple Network Management Protocol (SNMP) to manage LAN-attached devices.

The software product, dubbed Access Manager, runs on a Sun Microsystems, Inc. SPARCstation IPC workstation attached to an Ethernet local-area network supporting the Transmission Control Protocol/Internet Protocol. It can manage any device — such as LAN bridges, routers or hubs — that supports the OSI Common Management Information Protocol (CMIP) or SNMP.

To manage devices using CMIP, Access Manager employs the CMIP over TCP/IP standard known as CMOT.

Access Manager uses dual protocol stacks, meaning Gandalf TCP/IP and SNMP software runs alongside an OSI stack from Touch Communications, Inc., said John Hanton, product-line manager for Gandalf's network management systems.

The product supports standard SNMP Management Information Base (MIB) I and II variables, which define managed objects. It also supports MIB extensions from Cabletron Systems, Inc., Proteon, Inc. and SynOptics Communications, Inc. that enable it to manage products from these vendors, Hanton said. In addition, it can be customized by the user to support other vendors' MIB variables.

Access Manager can feed net management data to larger integrated net management systems, including those from AT&T, Digital Equipment Corp. and IBM, Hanton said.

Access Manager comes in two versions, both of which use the Open Software Foundation's Motif graphical user interface. The Domain Edition is for nets with fewer than 250 managed devices. The Enterprise Edition supports nets with thousands of devices.

Available now, Access Manager software ranges in price from $4,000 to $18,000. ◘

Racal-Milgo helps bank convert to digital data net

By Paul Desmond
Senior Editor

COLUMBUS, Ohio — Banc One Corp., based here, recently announced a $6 million contract with Racal-Milgo for data networking products that will enable the bank to merge multiple analog networks onto a single, predominantly digital network.

The Racal-Milgo contract follows a previously announced $42 million contract the bank holding company signed with MCI Communications Corp. to upgrade the voice and data networks that serve the 752 branch offices of Banc One's 52 affiliate banks in seven Midwestern states.

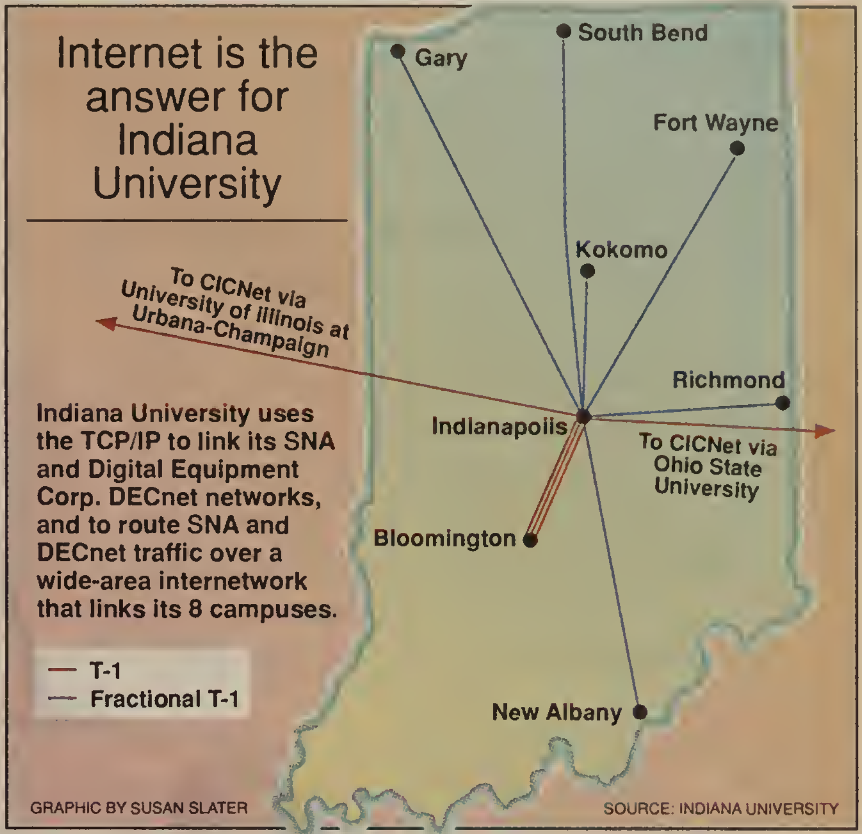
The upgrade to the voice net, which called for a migration of most voice traffic to MCI virtual private services, was completed about six months ago, said Ronald Cybyske, senior vice-president for information services at Banc One Services Corp., the bank's information services arm.

By year end, Banc One plans to complete the installation of its new digital data networking facilities in most sites, Cybyske said. Typically, that means replacing three 9.6K bit/sec multidrop analog lines — which supported separate applications, such as automated teller machines, IBM 3270 traffic and security systems — with a single multidrop digital circuit of up to 64K bit/sec that can support all three types of traffic.

Most of the digital links will be supported by Racal-Milgo's Excalibur Multiport Multidrop Digital Access Product, a combination multiplexer and data service unit/channel service unit that can feed different types of data traffic onto a single digital link. The product also provides dial backup, a feature the analog equipment lacks.

"We're striving to achieve 99.99% [availability] in the network and think we should be able to achieve that with this [configuration]," Cybyske said.

Racal-Milgo's Communications Management Series 400 net management system is also included in the contract, along with network design, optimization, installation, project management and maintenance services. ◘


Internet is the answer for Indiana University

Indiana University uses the TCP/IP to link its SNA and Digital Equipment Corp. DECnet networks, and to route SNA and DECnet traffic over a wide-area internetwork that links its 8 campuses.

GRAPHIC BY SUSAN SLATER

SOURCE: INDIANA UNIVERSITY

Indiana U. merges traffic onto backbone

Backbone links 8 campus nets, supports LAN and SNA traffic, and extends service availability.

By Maureen Molloy
Staff Writer

BLOOMINGTON, Ind. — Indiana University has installed a multiprotocol backbone that links local-area networks and SNA devices on eight campuses, giving users access to data bases and other network resources across the statewide internet.

The intercampus backbone will eventually replace two separate networks: an IBM Systems Network Architecture net that supports administrative data and a Digital Equipment Corp. DECnet that supports academic data.

By merging traffic from those nets onto a single backbone, the university will lower its network costs but, more importantly, broadens the availability of services to users on its campuses.

"The distances between campuses pose challenges that we must meet by innovative technologies, drawing together people and resources," university President Thomas Ehrlich said in response last October to receiving an INTEROP Achievement Award for Internetworking in Education.

The LAN internetwork is part of Ehrlich's vision of "one university with eight front doors."

The goal of that vision, according to Dick Ellis, principal analyst for the University Computing Services' Network Planning and Development group, has been to transparently link users to data bases and other information sources throughout the university.

"Internetworking is a tool that allows a common transport for all academic and administrative information and, ultimately, will allow the university to eliminate the distinction between the two," Ellis said.

Administrators are now tied into the same information nets as faculty, thereby smoothing communications and encouraging new levels of information access.

The universitywide internet spans about 300 miles from the campus in Gary to the one in New Albany (see graphic, this page).

Building a common link

The initial challenge at the main campus here was creating a link between the SNA network and the DECnet.

The university decided on an open network architecture and began migrating applications to Transmission Control Protocol/Internet Protocol in 1988 as the way to integrate resources.

Previously, all central administrative applications were housed on an IBM 3090 mainframe and available only to users with SNA terminals. Now, they've been retooled to support TCP/IP as well as SNA. This enables users on LAN-attached workstations to access the 3090-resident applications via the TCP/IP net.

Furthermore, users on the SNA net can now access the TCP/IP net through ACCES/VT software running under MVS.

(continued on page 57)

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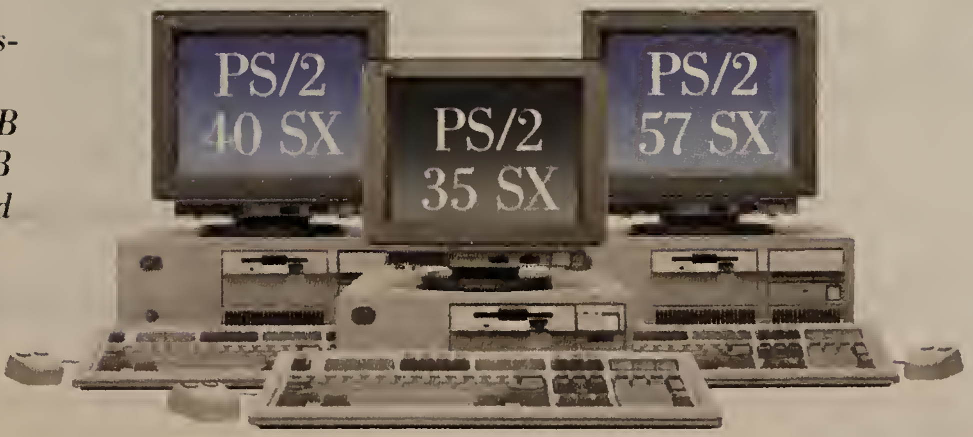
The Personal System/2® Model 57 SX brings new levels of value to a Micro Channel™ PS/2, providing data integrity and increased performance in connected and multitasking environments. It comes with a new generation 2.88MB diskette drive and SCSI on the planar. The popular 55 SX has also been upgraded. It offers affordable Micro Channel performance, now with 4MB RAM and 40 or 80MB hardfiles. And our two newest AT-bus PS/2s deliver powerful performance at practical prices. The 40 SX offers full desktop expandability while the 35 SX packs its power into a smaller footprint. And with 132-column screen support, a new 122-key keyboard and IBM software, all new models can also run existing mainframe host terminal applications.

IBM also has new ways to improve PS/2 performance, starting with a new, faster, more user-friendly DOS 5.0. It requires less memory, yet offers advanced functions like built-in task switching and a full screen editor.* The new PS/2 3.5″ Rewritable Optical Drive offers 127MB media capacity with a 66-millisecond average seek time, and the new Model 8504 12″ monochrome display lets you view it all with high resolution and clarity.

To get the full story, including our "PC Trade-In Offer," contact your IBM Authorized Remarketer or IBM marketing representative. For a remarketer near you, call 1 800 272-3438, ext. 386.

Models 35, 40 and 57 SX feature i386 SX 20 MHz processors, 16-bit VGA and 5.25″ internal drive capability. 80/160MB hardfiles are available on the 57 SX; 40/80MB on the 40 SX and 35 SX. Memory is upgradable to 16MB with 4MB standard on the 57 SX, 2MB on the 35 SX and 40 SX. The 40 SX and 57 SX each have five expansion slots and four DASD bays; three slots and two bays on the 35 SX. A medialess 35 SX LAN station model is also available with a Token-Ring Adapter standard.



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July 30	San Francisco, CA
July 31	Seattle, WA
Sept 10	New York, NY
Sept 11	Boston, MA
Sept 12	Hartford, CT
Sept 13	Toronto, ONT
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Sept 18	Detroit, MI
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LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

"X.400 is pretty lame when it comes to building companywide [electronic] mail backbones."

Janet Hyland
Director of network
strategy research
Forrester Research, Inc.
Cambridge, Mass.

Netnotes

3Com Corp. recently introduced its MultiConnect TP Starter Kit, an entry-level 10BaseT modular hub that enables users to expand their MultiConnect devices in increments of three ports. Most 12-port hubs available today can only be expanded by daisy-chaining a second hub to the unit, but 3Com's product will change that, said Pat Conlon, product manager at 3Com's Network Adapter Division in Santa Clara, Calif.

The kit consists of 3Com's 12-port MultiConnect Repeater bundled with four MultiConnect 10BaseT Modules. The repeater can accommodate as many as 15 modules. Most importantly, the customer can save money with the incremental expansion, according to 3Com.

The MultiConnect TP Starter Kit is available now for $1,650. Additional 3Com TP Modules cost $395 each.

GUPTA Technologies, Inc. will hold its second annual International GUPTA Developers Conference Aug. 18-21 in San Francisco. The theme of the event is Opening Windows to SQL: From The Workgroup To The Enterprise.

Keynote speakers will include Umang Gupta, president and chief executive officer of GUPTA Technologies; Jim Bills, executive vice-president of sales for Novell, Inc.; Tony Rego, planning manager for client/server computing at IBM; and Herbert Edelstein, principal and founder of Euclid Associates, a data base consultancy.

To register for the conference, call (800) 672-2700. ◼

Survey finds X.400 is not E-mail backbone of choice

X.400-based wares considered not mature enough.

By Caryn Gillooly
Senior Editor

CAMBRIDGE, Mass. — The Open Systems Interconnection X.400 standard for electronic messaging is falling short of user expectations and will not likely oust proprietary electronic mail backbones for intracompany communications, according to a new study.

A Forrester Research, Inc. report, "E-mail Backbones," said X.400 has too many problems at this point to be used for intracompany E-mail. The report cited X.400's complex addressing scheme, limited support for network transports and costs as limiting factors.

The study also said 90% of the Fortune 1,000 companies have disconnected proprietary E-mail systems, while the other 10% have a proprietary backbone connecting the disparate systems. During in-depth interview with 15 leading E-mail users, Forrester found only two customers that use X.400 internally.

The reason that few proprietary E-mail backbone nets have been implemented starts with the cost and complexity of installing and operating such a backbone, no matter what the protocol, according to users cited in the study. "Rolling out a corporate messaging backbone will expose anything wrong with your networks," said a representative from a financial company cited in the study.

A petroleum refinery representative agreed, "This is not the Dow Jones, but [electronic] mail is one of the most network-intensive applications."

Other problems with creating any E-mail backbone stem from inconsistencies between proprietary packages. "Each mail system has its own directory," said a representative from a chemical firm. "There's no way to synchronize them all. If a user gets added to one system, nobody on other systems knows about it."

By its nature, X.400 would seem to help in joining proprietary systems for those customers that were determined to implement a corporate E-mail backbone. This, however, is not the case, according to the report.

"[X.400] products available today are just not functional

(continued on page 22)

Vitalink's OMS to manage multiple internet devices

By Timothy O'Brien
West Coast Bureau Chief

FREMONT, Calif. — Vitalink Communications Corp. recently announced its intention to deliver by year end standards-based network management software that can be used to control multiple vendors' internetworking equipment from a central workstation.

Vitalink's said its Open Management System (OMS) will run on a Sun Microsystems, Inc. SPARCstation and support Sun's SunNet Manager software as well as the Simple Network Management Protocol (SNMP).

Unlike Vitalink's WANmanager, a proprietary system for monitoring and controlling only Vitalinks bridges, OMS will monitor and control any device on an internetwork that supports an SNMP agent, the vendor said.

"This will be the centerpiece of our strategy," said Dana Hendrickson, Vitalink's assistant vice-president of business development. "OMS will be the product used to manage all the internetworking products we market."

Although Vitalink will continue to support WANmanager, all new development will be focused on OMS, and the vendor will work to migrate customers to the new platform.

Vitalink, recently acquired by Network Systems Corp. (NSC), has entered into cooperative development agreements this year with Coral Network Corp. and Netlink, Inc. to provide internetworking products for Fiber Distributed Data Interface, T-3 and IBM's Systems Network Architecture networks. Hendrickson said OMS will support these products and those from Vitalink and NSC.

Vitalink said it chose the Sun platform because it is widely used for SNMP-based net management systems. By relying on the SunNet Manager as the basis for its core management functions, the company intends to announce new features that expand on

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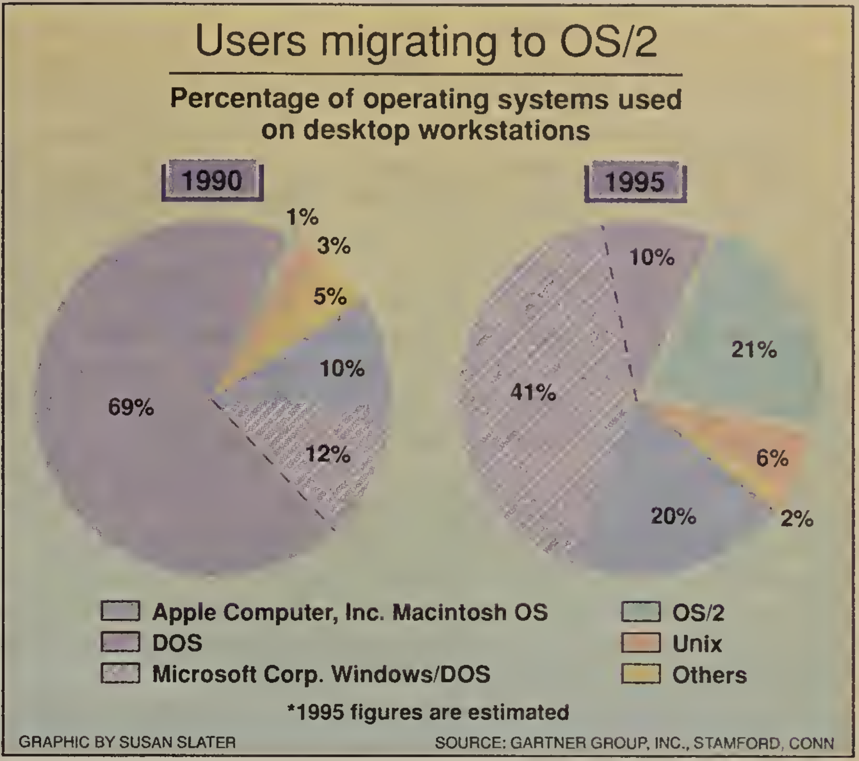

Users migrating to OS/2

Percentage of operating systems used on desktop workstations

*1995 figures are estimated

GRAPHIC BY SUSAN SLATER

SOURCE: GARTNER GROUP, INC., STAMFORD, CONN

OS/2 to be strong contender in OS fight

OS/2 viewed as a cinch to run on net servers but will vie for client devices with DOS, Windows.

By Salvatore Salamone
Features Writer

Over the next four years, OS/2 will emerge as a viable operating system contender to Microsoft Corp.'s DOS, despite confusion caused by the IBM-Microsoft rift over OS/2 and the current market dominance of Microsoft Windows 3.0.

According to users and analysts, OS/2 will likely become a common choice as a server-based operating system because it enables applications to take advantage of multitasking features.

For some users, OS/2 may even prove viable as an operating system for client workstations, although some industry observers say it will face a tougher challenge from Windows for control of the user workstation market.

Last year, IBM and Microsoft licensed only 300,000 copies of OS/2, according to San Jose, Calif.-based market research firm Dataquest, Inc. That compares to the 2.25 million copies of Windows 3.0 that Microsoft said it sold in the product's first eight months of sales.

Despite the lopsidedness of today's operating system market, 21% of all desktop computers will use OS/2 as the primary operating system by 1995, according to Gartner Group, Inc., a Stamford, Conn.-based market research firm. That would greatly improve on the meager 1% market share OS/2 attained last year (see graphic, this page).

One reason for the optimism, industry observers said, is that today's number of units shipped is not a true indication of OS/2's future potential in the local-area network environment. "There's certainly a limited number of OS/2 licenses, and OS/2 has a small installed base," said Stewart Skomra, vice-president of marketing at iLAN, Inc., a Columbus, Ohio systems integrator. "But these licenses are only for the development environment."

Skomra said he believes that application development based on these small number of licenses will soon be complete and the number of OS/2 licenses will grow substantially.

"A typical Fortune 100 company has bought [a dozen or so] OS/2 licenses for developing applications that will eventually run on 10,000-node networks," he said. "We should see some of these applications operating on these networks in the next 12 to 18 months."

Migrating to OS/2

Although companies are developing OS/2 applications, some observers warn that many users will employ the operating system on networks servers instead of client workstations.

"It's expensive to upgrade the client," said Marc Rosenthal, personal computer system analyst at the New York law firm of Cravath, Swaine & Moore. "I'm not talking about the cost of the software, but the hardware. OS/2 1.3 takes 30M [bytes] of space on a hard disk."

Rosenthal noted that most of his client workstations are IBM

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OS/2 to be strong contender in OS fight

continued from page 21

Personal System/2 55 SX microcomputers with 30M-byte hard drives. "With my [workstations], OS/2 leaves no room for documents or data base information to be stored locally," he said.

Currently, Cravath, Swaine & Moore stores most of its data locally, so the amount of disk space needed for OS/2 is a problem in the client environment.

Rosenthal's firm is converting all its servers to OS/2. For now, the company will probably use DOS 5.0 on the clients. "[DOS 5.0] is cheaper, takes less memory and more RAM is available than with OS/2," he said.

ILAN's Skomra doesn't believe the hardware issue that Rosenthal raises will be a problem. If a user is considering OS/2 over a combination of DOS and Windows on the client, the hardware considerations are about the same, he said.

"Windows does not take as much disk space as OS/2," Skomra said. "But many machines that have the 4M [bytes] of memory needed to run Windows come with a hard disk that has the storage capacity for OS/2."

OS/2 or Windows?

A user considering OS/2 vs. Windows on client workstations is facing more than a philosophical decision.

"Windows initially looked impressive," Rosenthal said. "Similar to OS/2, it allows you to cut and paste between applications." But he added that when a Windows application crashes, it usually brings the client workstation down with it.

This is not a problem with OS/2. "With OS/2, if there is an error, it won't take the whole system with it," Rosenthal said.

Skomra agreed, "Clients running OS/2 eliminate some of the net performance problems because of the multitasking nature of the operating system. [The system] isn't held up by retries or by degradation of performance on the net."

Clients running Windows have other problems. A *Network World* survey of net managers conducted in April found that 29% had difficulty using Windows with their operating system ("Survey: Drawing a bead on net managers' top concerns," *NW*, June 3). Furthermore, 27% of the respondents said Windows on clients caused network performance problems.

In addition to performance issues, there are other factors to consider when choosing between OS/2 and Windows.

Skomra said he believes OS/2 brings many benefits to certain applications. For example, a help desk staffer sitting at a workstation with OS/2 running on the client can be more responsive to problems on the network.

"Using OS/2's multitasking features, I can have alerts sent to the foreground and notify the operator that a higher priority task has arrived," Skomra said. "In a Windows environment, the operator must query the system to see if there is a new problem."

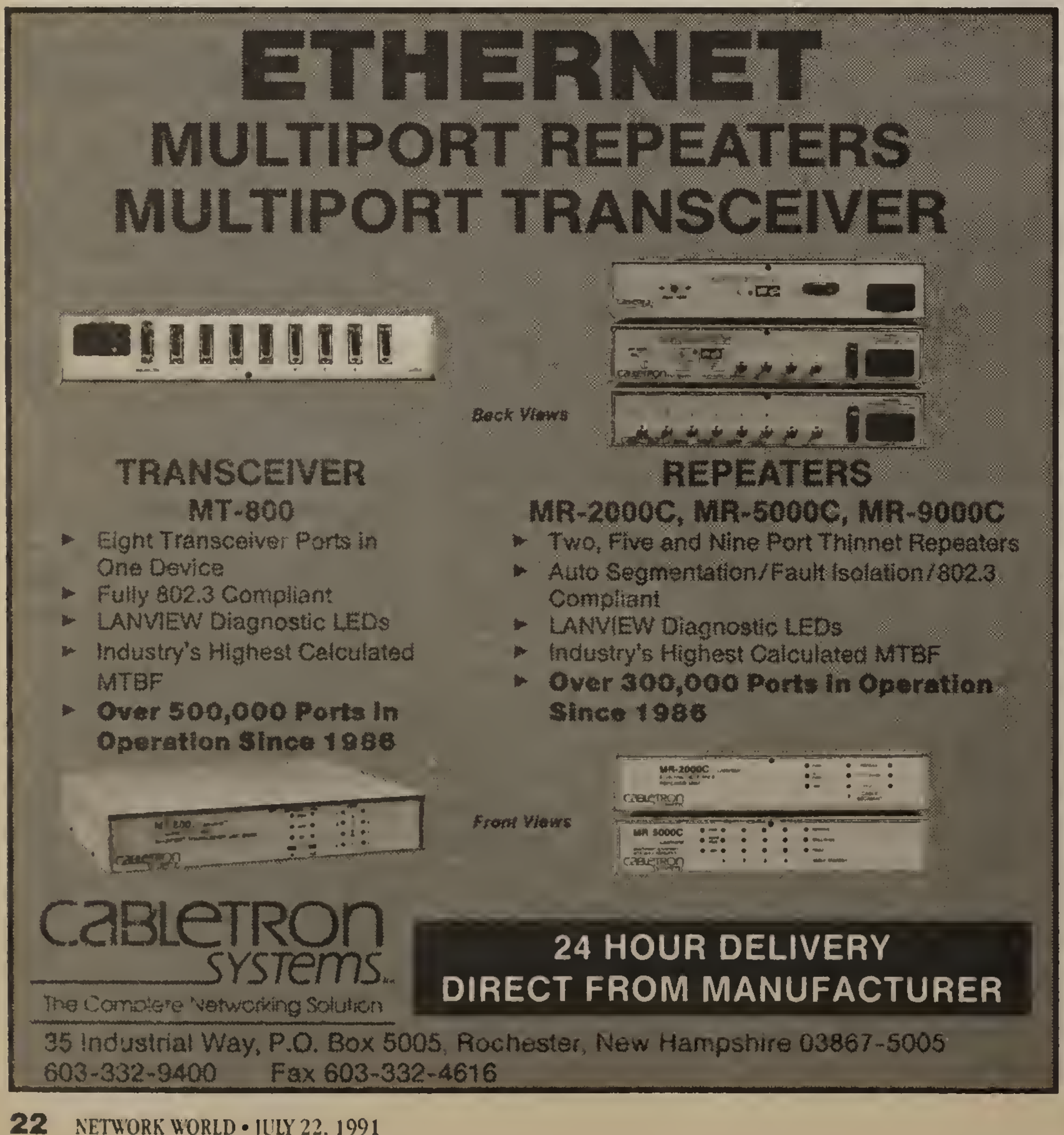
The two approaches are fundamentally quite different. "Windows is user-driven; OS/2 is a system-driven environment," he said.

Moving to OS/2 seems to bring fewer network-related problems than moving to Windows. It also offers additional advantages such as more responsive interplay between the client and server. But those wanting to take advantage of OS/2's power must choose between Microsoft's OS/2 and IBM's version.

"The two will never meet again," Skomra said. Applications will be developed for both, and they may not be compatible.

"That means users need to make a choice today betting on the future of those alternatives," he added.

Rosenthal and Skomra both lean toward IBM's OS/2. They said OS/2 1.3 is adequate and OS/2 2.0, which is due out at year end, will be even better. Meanwhile, Microsoft's OS/2 Version 3.0 isn't expected to be available until late 1992 or early 1993.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Cayman intros software that lets X Window devices use Mac wares

By Caryn Gillooly
Senior Editor

CAMBRIDGE, Mass. — Cayman Systems, Inc. last week introduced software for Apple Computer, Inc. Macintoshes that enables X Window System terminals or workstations to use applications residing on a Macintosh.

With the company's new XGator software, X Window users on terminals or Unix workstations can run local Macintosh applications in a window alongside other X Window applications or access Macintosh applications remotely via Transmission Control Protocol/Internet Protocol links.

The XGator software runs on any Macintosh Plus, SE or II Series running System 5.0 or higher. With the software, the Macintosh acts as an applications server; any number of X Window users can log onto the microcomputer over a TCP/IP net and launch applications residing on the Macintosh. Users will even be able to cut and paste between Macintosh and Unix applications, the company said.

According to Cayman, based here, XGator is the first X Window client for the Macintosh. X Window users will also have access to any resource available through the Macintosh, including electronic mail and printers.

"XGator runs on the Mac and basically brings that Mac and all the applications on that Mac into the Unix environment," said Eric Janszen, product marketing manager for Cayman. "So any workstation or X [Window] terminal user [in a Unix environment] can Telnet using TCP/IP to a Mac on the net and run those [Mac] applications remotely."

On the management side, with the connectivity provided through XGator, network managers will be able to monitor, configure and maintain AppleTalk devices from an X Window terminal or workstation using existing AppleTalk management devices or such packages as EtherPeek and NetWachman from The AG Group.

"On internetworks with many Macintosh users, XGator lets network administrators manage the Macintosh network and support users without leaving their terminals," Janszen said.

The administrator at the X Window terminal or workstation will also be able to take over or share a Macintosh user's screen to make it easier to help and instruct users, according to Janszen.

XGator will work in conjunction with Cayman's existing Macintosh connectivity products, such as its GatorBox CS, to make X Window-to-Macintosh connections over an Apple LocalTalk network, and GatorShare, to let X Window terminal users copy files from the Macintosh.

XGator is expected to be available next month at $495 for a single-user license and $3,750 for a 10-user license.

X.400 is not E-mail backbone of choice

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enough to put on internal backbones," said Janet Hyland, director of network strategy research at Forrester.

The first problem with X.400 is its addressing scheme. According to Hyland, the scheme was originally designed to be expandable in order to accommodate any number of new E-mail addresses at any location. But, she said, some X.400 destinations can require up to a two-line address, which then must be masked by the network administrator so the users will use the system.

The types of networks X.400 uses to transmit messages is another issue, as X.400 only runs over X.25 or OSI nets. "Companies with neither [X.25 nor OSI] are reluctant to implement them just to run X.400," Hyland said. She added that vendors are currently working on products that will let X.400 run over the Transmission Control Protocol/Internet Protocol, but they are not yet available.

Expense is another limiting factor. According to Hyland, not only will customers incur the expense of X.400 software, which is more costly than proprietary products, but many users will also expend manpower and additional funds to debug the products.

According to the study, the first implementations of X.400 are for communications between corporations, rather than internal company communications. Many corporations are currently in the process of installing mail links with trading parters using X.400 gateway connections to various public X.400 mail carriers.

"Before X.400, it used to take six to eight weeks to establish a link with another company," the chemical company representative said. "Now, with one phone call, you can be sending mail to Exxon [Corp.] in an hour."

OMS to manage multiple devices

continued from page 21

SunNet Manager's SNMP capabilites.

Vitalink plans to use SunNet manager application program interfaces (API) to modify and add functionality to existing SunNet Manager applications.

"The element network management capabilities of SunNet Manager were already there — we didn't have to start from scratch," said Doreen Pizzaro, Vitalink product manager for network management products. "Our strategic direction now is to work towards standards."

In addition to managing and monitoring Vitalink devices, OMS will allow users to control other SNMP-based internetworking gear through features that include various settings for device configurations, user-defined alarm thresholds and network status monitoring through unsolicited alarms.

Through the graphical interface, users can monitor the network's status.

Several types of event monitoring will continuously update users on the health of the network and support proactive problem management by providing early notification of degrading net conditions.

Pricing for OMS will start at $10,000 for software only and will run about $40,000 for hardware and software packages.

MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USER GROUPS AND ASSOCIATIONS

Worth Noting

"We're almost to the stage of disposable equipment and software. Product life cycles are short and becoming even shorter."

Ron Brown
Independent
communications consultant
Melrose, Mass.

Association Watch

The annual meeting of the **Vitalink User Exchange** will be held Sept. 24-27 at the Parc Fifty Five Hotel in San Francisco.

Users of Vitalink bridges and routers will be gathering to exchange ideas on how to improve the operation of their networks, as well as to participate in educational sessions on such topics as how to apply Vitalink products in advanced networks.

For more information, contact Lisa Rico at (415) 795-6182.

The **Association of Data Communications Users (ADCU)** recently elected a new slate of officers for two-year terms.

Ronald West, manager of telecommunications and office automation at Shearman & Sterling was elected president.

The new first vice-president is KPMG Peat Marwick's Janet Hufton, while Pat Ryan from Pitney Bowes, Inc. holds the position of second vice-president.

Ralph Newton of North America Philips Corp. was elected treasurer, and Robert Connelly of ADT, Inc. will serve as secretary.

The first director-at-large is John Falzone of John Hancock Mutual Life Insurance Co., and the second director-at-large is Tim Simmons of Reilance Insurance Co.

For more information on the ADCU, contact Executive Director Augie Blegen at (612) 881-6803. ◻

NVG employee assembles components for automotive drive trains.

GM, Chrysler spin-off plots network, systems overhaul

New infrastructure will help support firm's growth.

By Wayne Eckerson
Senior Editor

TROY, Mich. — New Venture Gear (NVG), one of the largest makers of four-wheel drive power trains, isn't afraid of big challenges.

The company plans to virtually double its revenue to $1 billion within the next 15 months and is rebuilding its information systems (IS) and network from the ground up in order to handle the anticipated growth.

"It's almost unheard of for a company our size to completely [revamp] its systems," said Kurt Gogolin, the company's IS manager.

NVG was formed in February 1990 as a joint venture between Chrysler Corp. and General Motors Corp. The firm has two manufacturing facilities: a site in East Syracuse, N.Y., formerly operated by Chrysler's Acustar automotive components manufacturing subsidiary; and a plant in Muncie, Ind., previously run by GM.

For the past 18 months, NVG has been trying to operate as a single, unified company, despite the fact its manufacturing sites continue to function as GM or Chrysler units. The main problem is that each plant uses different IS and operating procedures, and there is no network interconnecting the sites.

Currently, much of the work involved in consolidating and reconciling data from the two plants is done manually. However, that will change with the network overhaul.

Realizing it couldn't build the required systems and network on its own within two years, NVG turned to Digital Equipment Corp. for assistance.

Last month, NVG awarded DEC a five-year, multimillion dollar contract to design, install and operate new computers as well as business and engineering applications. DEC will also build a new corporate network linking the company's facilities.

"Essentially, we're going to act as NVG's IS department," said Bruce Ryan, vice-president and corporate controller at DEC.

According to Gogolin, NVG is not outsourcing operations. It is retaining ownership of all equipment DEC installs and operates and will not transfer any NVG employees to DEC's payroll. Instead, DEC will perform facilities management services, he said.

However, Gogolin would not commit to NVG taking back its IS and network operations once the five-year contract expires.

DEC will supply between 20 and 25 staff people to help define user requirements for the new business and engineering applications. They will also install new software and hardware as well as electronic mail and electronic data interchange systems. Once the installation is completed in about two years, DEC will maintain a staff of about 15 to manage the systems and network.

DEC's assistance was critical since NVG has only a handful of IS staffers who are currently maintaining systems in the plants, Gogolin said.

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EDIA chief discusses hurdles facing EDI

New president says users must address business and technical issues to make EDI projects pay off.

Gregory Harter, the newly appointed president and chief executive officer of the Electronic Data Interchange Association (EDIA), officially took charge last week, replacing Jerome Dreyer, who was EDIA's president for the past three years.

Harter is the former director of finance and EDI Coordinator for Cummins Engine Co., where he led major domestic and international EDI implementation projects for the engine manufacturer. He also founded and chaired the Finance Truck Action Group, an arm of the Automotive Industry Action Group that focuses on EDI issues in the heavy truck industry.

Harter spoke with *Network World* Staff Writer Maureen Molloy last week to discuss the EDIA's future direction and the key concerns of its user members.

What are your goals for EDIA?

My mission statement for EDIA is similiar to what it's always been: to be the organization that users can turn to in order to better understand the value of EDI, learn how to implement it and obtain information about how other companies are using EDI to become more competitive.

One of the main reasons I accepted this job is that I strongly believe we need to get the business and the technical issues involved in EDI heading down the same path.

I don't have a strong technical background. My background is business. EDI as a business issue is as important as EDI as a technical issue. The two must work together if EDI is to succeed.

What are the major challenges facing the EDI community?

The major challenge is integrating the two key groups that should be working together to help companies implement and integrate EDI — the technical group and the business groups of the organization.

The reason we haven't seen the explosive growth of EDI that was expected four years ago is that companies either focus on the business issues related to EDI

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GUIDELINES

BY ERIC SCHMALL

Keeping calm is correct response to net break-ins

Having someone hack into your private branch exchange or voice mail system is one of those life-altering events, much like being mugged or having your house burglarized. No matter how small the damage or loss, you feel violated and angry.

But giving way to feelings of outrage can retard recovery from a hacker's assault. Network managers need to remain cool in order to steer the company and the department toward the right course of action. Unfortunately, some net managers overreact to a hacking incident, letting their fears and insecurities guide their response. In their panic, these managers start ringing alarms before they have gathered all the information about the intrusion and the damage it caused.

To atone for letting a hacker invade the PBX or voice mail system, the managers spend inordinate amounts of time devising ways to make the system impervious to assaults. They advocate draconian security measures, which make the system cumbersome and unattractive for staff use.

Equally at fault are the managers who try to cover up the incident in order to protect their professional reputation. They do all they can to keep news of the security breach from

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Schmall is a net manager for an insurance holding firm.

EDIA chief discusses hurdles facing EDI

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or the technical issues, but don't pull the two together. An EDI project has little chance of survival when there's a failure to pull the business and technical issues together. And it's been taking a while for this notion to come to fruition in many companies. The companies that succeed at EDI are those that address both the business and systems issues in a cooperative manner.

Has the soft economy caused companies to back away from EDI programs?

The economy has stalled or halted some EDI programs, but I believe the economy's impact has been limited.

The recession will cause EDI projects to flounder only in companies where EDI is seen as a discretionary effort, where it's not seen as a strategic tool for market share or long-term survival. In companies that see it as a competitive tool, EDI survives the strict prioritization of projects that occur during slow economic times.

Have EDI managers been successful in cost-justifying EDI?

Judging from my own experience at Cummins, doing a cost/benefits study is very difficult. It's very easy to identify the costs of doing an EDI pilot or even planning a complete migration.

However, it's very difficult to identify all the benefits because so many of them do not involve tangible, hard dollar savings.

Have companies been able to move beyond the EDI pilot stage and develop sophisticated programs in which EDI is integrated with their applications?

There's never a good reason to do an EDI pilot just for the sake of doing a pilot. The companies that have gotten beyond the pilot are, again, the ones that view EDI as a facilitator, and not a goal in itself. The real goals are things like increased market share and the ability to expand into new markets. This is the stated objective of companies that have been able to develop sophisticated EDI programs.

Are large EDI users becoming more sensitive to the needs of their smaller suppliers?

Yes. Initially, EDI pilots focused on major trading partners, but that has slowly changed.

In the past, for instance, a company with 1,000 trading partners would do EDI with the 10 major ones who represented 80% of their business. Now that's a significant move, but then they began to understand that, although those 10 partners might represent 80% of the business, they still don't begin to represent 80% of the transactions.

The key is not the dollar value but the transactions. What's important is how many transactions have been converted to an EDI format. The reason is, even though you may have a significant amount of money coming in via EDI, a substantial administrative work load remains in handling the rest of your trading partners that communicate with you in the parallel conventional mail format. And as you begin to add more trading partners and start climbing that curve, where you get to perhaps 70% to 80% of the transactions implemented via EDI, you begin to see the real worth in going all the way with EDI.

Gregory Harter

You cannot eliminate the administrative and manual work load until you get 100% of your trading partners on the EDI system. More companies are seeing this and are increasingly focusing more attention on their smaller trading partners.

How many companies are ready to use X.400 or X.435 to transmit EDI messages?

Unfortunately, not many. But these standards represent part of my vision for how this whole EDI scenario ought to play out.

Many companies have large electronic mail systems where they can easily communicate with others within their own company. There's no reason why you shouldn't also be able to communicate just as simply with other companies.

We've spent a lot of time and effort working to communicate within our own companies, but not with other trading partners. The standard now exists that would allow companies to interconnect their E-mail systems. The technology and the business reasons are there, and we have to work at getting more widespread adoption of these standards. ◼

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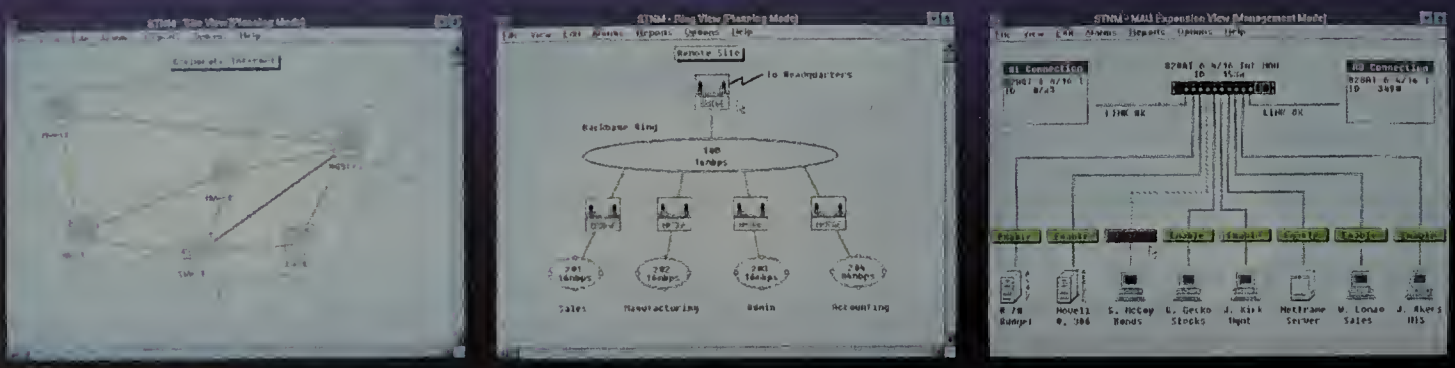

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- Making the Business Case for Open Manufacturing Networks
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- Making CIM Work
- MAP User Views
- Handling Cutovers and Upgrades
- Factory LAN Strategies
- Building the Paperless Plant
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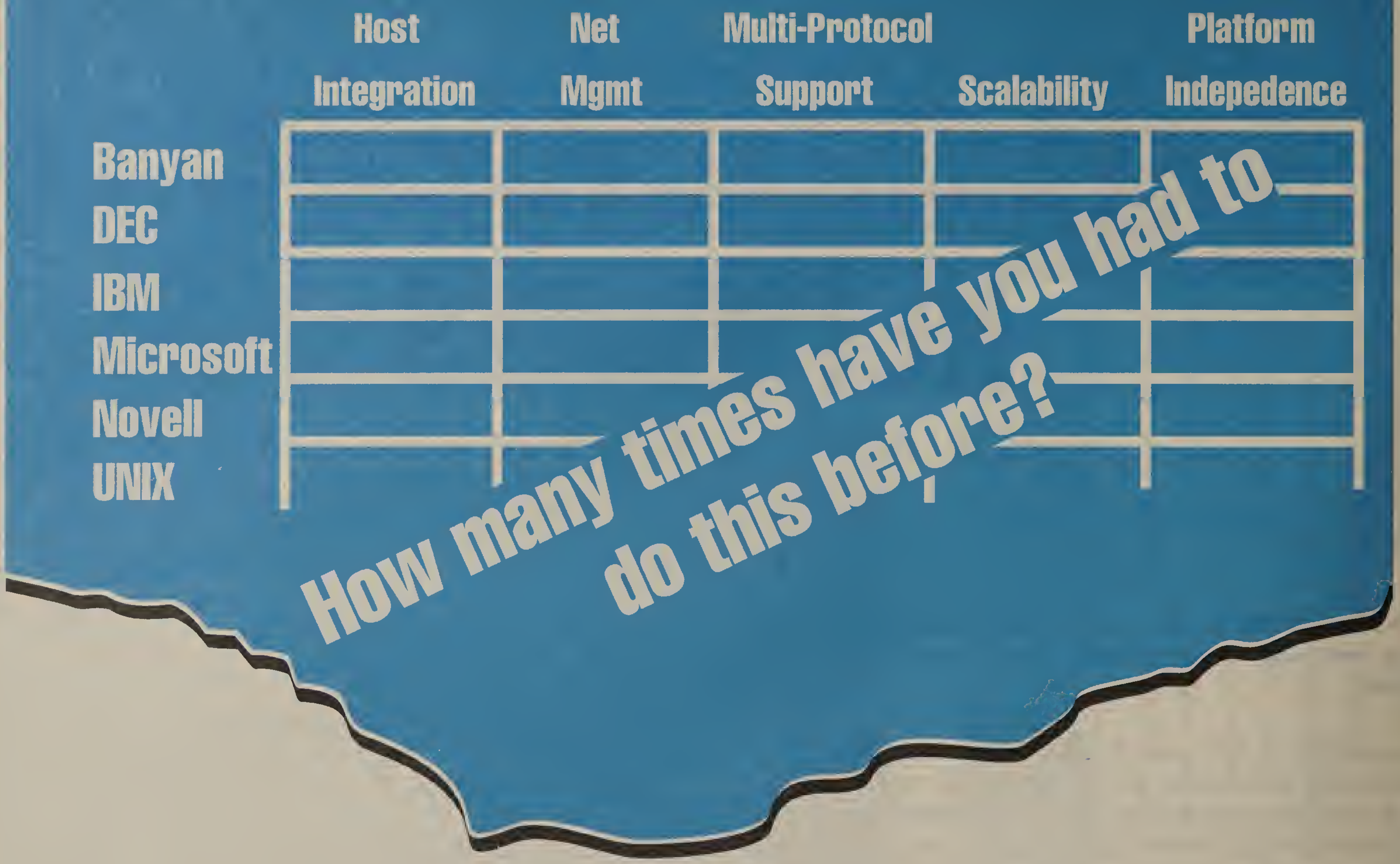

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World News

International carrier **TRT/FTC Communications, Inc.** recently said it has become the first U.S. carrier to begin providing international private-line service via the North Pacific Cable (NPC), a new submarine fiber cable between the U.S. and Japan. TRT/FTC said it is working with the Japanese carrier **International Digital Communications, Inc.** to provide a transpacific, 256K bit/sec private line to C. Itoh and Company, Ltd.

Meanwhile, outages on the NPC fiber cable continue. NPC went into service on May 15 but soon experienced an outage, due to a cable cut, that kept it out of commission until June 28, according to Pacific Telecom, Inc., which manages the U.S. half of NPC. Last week, a new outage occurred, which was due to a failure on a portion of NPC about 35 km off the coast of Japan. In both cases, all NPC traffic was restored via satellite.

OTC, Ltd. last week said it won a five-year contract to upgrade the international calling facilities of the Soviet Union Republic of Kazakhstan. Initially, OTC will install a new International Telecommunications Satellite Organization earth station in Alma- Ata, the capital of Kazakhstan, situated near its border with China.

The earth station will increase the number of international telephone circuits available to the republic from eight to 30, OTC said. In the next 18 months, OTC also plans to install a new digital international calling gateway switch.

Europe-to-U.S. X.400 E-mail connections

Country	Carrier	Links to U.S. carriers
Austria	Radio Austria A.G.	AT&T, US Sprint Communications Co.
Belgium	Regie des Telegraphes et Telephones	Not offered
Denmark	Telecom Denmark	AT&T, BT North America, Inc., MCI Communications Corp., US Sprint
Finland	Helsinki Telephone Co.	AT&T
	P&T Telematics	AT&T, MCI, US Sprint
France	France Telecom	AT&T, Infonet Services Corp., MCI, US Sprint
Germany	Deutsche Bundespost Telekom	AT&T, MCI
Italy	ItalCable	AT&T, BT North America
	Telco	Not offered
	PT Postel	MCI, US Sprint
Netherlands	PTT Telecom, N.V.	IBM, US Sprint
Norway	Norwegian Telecommunications Administration	MCI, US Sprint
Spain	Compania Telefonica Nacional de Espana	AT&T
Sweden	Televerket	AT&T, BT North America, US Sprint
Switzerland	Swiss PTT	AT&T, MCI
U.K.	British Telecommunications PLC Gold 400	AT&T, BT North America, MCI

GRAPHIC BY SUSAN J. CHAMPENEY SOURCE: AT&T AND BP AMERICA, INC.

Rivals push France Telecom to expand its int'l presence

Competition forces carrier to shore up int'l position.

Frederic Pelloud
IDG News Service

PARIS — Although France Telecom has historically kept a low international profile, it now has a new objective — to earn 5% of its revenue from international operations next year and 10% by the year 2000.

Such a move would be an about-face for the carrier, which currently generates only 600 million francs ($115 million U.S.) in annual international revenue on overall annual revenue of 103 billion francs ($20.4 billion U.S.).

To reach its goal of increasing international revenues, from now until the year 2000, France Telecom plans to invest about two billion francs ($385 million U.S.) annually into international operations.

"That might seem little, but everything is relative," said Michel Huet, manager of the France Telecom unit that controls much of the state-owned carrier's international operations.

France Telecom is investing abroad because competitive pressures are forcing its hand. On

(continued on page 28)

U.S. assails int'l rates imposed by carriers

State Dept. proposal asks CCITT to recommend accounting rates be tied to actual service costs.

By Maureen Molloy
Staff Writer

WASHINGTON, D.C. — The U.S. Department of State has issued a proposal to the Consultative Committee on International Telephony and Telegraphy (CCITT), asking it to recommend that all international telephone rates be tied to actual service costs instead of arbitrary charges set by carriers.

The department has submitted the proposal in an effort to rectify what it views as inflated costs U.S. carriers remunerate to foreign carriers for international phone service. These costs in turn are passed on to customers in the form of high international calling rates.

The proposal, which will be discussed at a CCITT meeting next month, further asks that all accounting rates be made publicly available. The idea behind this request is that public scrutiny of accounting rates will increase pressure on foreign carriers to lower their rates.

"We agree with the emerging international consensus that existing international telephone accounting rates are generally not cost-based," said Earl Barbely, director of telecommunications and information standards at the State Department's Bureau of International Communications and Information Policy. "We view this proposal as a first step in generating more widespread discussion of the subject."

Currently, individual carriers negotiate accounting rates for international calls using guidelines set by the CCITT. These rates are mutually agreed upon per-minute costs that carriers use to assess how much carriers who terminate an international call should be compensated by carriers who originate the call.

On any international call, the originating carrier owes the terminating carriers half of the international accounting rate. The problem, Barbely said, is that accounting rates are inflated and bear little relationship to actual service costs or to the prices carriers charge consumers.

The Federal Communications Commission is concerned that foreign carrier rates may not be justified by actual operational costs and that foreign governments may be using the excess outflow of U.S. dollars to subsidize other national operations, such as postal service.

The commission said it believes foreign carriers are overcharging customers by as much as 50% for the portion of the international calls they carry.

During the past decade, the U.S. has become a debtor nation for telecommunications services. In 1988, U.S. carriers paid over $2 billion more than they collect-

(continued on page 28)

> "We agree that existing international rates are generally not cost-based."

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What it takes to be the international specialist. #4 in a series.

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—Stephan Folgnand
Managing Director,
Germany
WorldCom Telecommunication
Services GmbH

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U.S. assails int'l rates imposed by carriers

continued from page 27

ed from foreign carriers for international switched services. And an FCC report concluded that 75 cents of every dollar that U.S. consumers spend on international calls goes to foreign carriers ("U.S., Europe to investigate international rates," *NW*, April 23, 1990).

The FCC has suggested one way to correct the rate imbalance is to persuade foreign carriers to lower accounting rates and the prices they charge consumers.

Phillip Onstad, manager of International Public Policy for the International Communications Association said his organization fully supports the proposal because, if accounting rates are brought in line with the cost of providing the service, collection charges to the user will subsequently be reduced.

"Accounting rates, particularly those between the PTTs of the developing nations, are a very guarded secret," Onstad said. "Until all rates are made public, there is little room for negotiation."

He added that public pressure is the only way to convince carriers to voluntarily renegotiate what he said are currently inequitable rates.

"It's a farfetched goal, I'll admit, but if we hope to achieve fairer rates, [then] more visibility and dialogue must be given to the subject," Onstad said. ◼

Rivals push carrier to expand presence

continued from page 27

Jan. 1, for example, the French government enacted new telecommunications regulations that end monopolies on basic data communications services that France Telecom has held for more than 150 years.

France Telecom's dominance of domestic terminal equipment and value-added network services markets has also eroded over the past few years. The new "open" French network market currently represents about seven billion francs ($1.3 billion U.S.) and is expected to grow 20% annually.

The carrier also faces increased competition on the international front. For example, rumors have been circulating that IBM and British Telecommunications PLC are planning to team up to provide international services to large corporations. A cross between IBM and British Telecom, which operates under the most liberal regulatory environment of all the European post, telegraph and telephone administrations, could pose a major threat to France Telecom's international services business.

Faced with threats such as these, France Telecom has already embarked on several initiatives to shore up its international business. For example, the carrier teamed with Germany's national carrier Deutsche Bundespost Telekom in 1989 to form a network services partnership called Eucom. Eucom is currently worth 80 million deutsche marks ($52 million U.S.).

In May 1989, France Telecom acquired the software and network services division of the French firm GSI Transport-Tourisme. This division reported 170 million francs ($32.7 million U.S.) in revenue last year and recently acquired value-added net operators in both Germany and the Netherlands. GSI predicts that these two acquisitions will increase its annual sales to as much as 280 million francs ($53.9 million U.S.).

> "We must show that we are capable of offering global solutions," France Telecom's Huet said.
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France Telecom also has extended its Integrated Services Digital Network service, called Numeris, to the U.S. via AT&T, to Japan via Kokusai Denshin Denwa, Ltd. and Nippon Telegraph and Telephone Corp., and to Belgium and Germany via Regie des Telegraphes et Telephones and Deutsche Bundespost, respectively. Numeris is expected to be extended into the U.K. and Denmark soon. France Telecom now has about 4,000 Numeris subscribers.

But carrier officials acknowledge that France Telecom still has a lot of catching up to do in the provision of international services. "We must show that we are capable of offering global solutions," Huet said.

Buying foreign carriers

France Telecom is also working to increase its international business with foreign carriers. For example, earlier this year, France Telecom, along with Southwestern Bell Corp., agreed to pay $420 million to operate, modernize and expand Mexico's telecommunications network.

A month earlier, in collaboration with Italy's STET, France Telecom agreed to invest $100 million to operate and develop the telecommunications network in the northern half of Argentina.

The Mexican deal will give France Telecom control of Telefonos de Mexico S.A. de C.V. for 35 years. The Argentine contract gives France Telecom monopoly control over the carrier serving the northern half of the country for seven to 10 years. Huet said France Telecom will make enough money to recoup its investments in both countries within about five years. ◼

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12. Wide-area networks currently in use at location.
13. Wide-area networks planned for purchase over the next 12 months (tied for first).
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15. T-1 or T-3 networks currently in use at location.
16. Micro-mainframe emulation boards currently in use at location.

Network World Readers . . . largest companies, biggest budgets, power to spend

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18. Can authorize expenditures in excess of $25K for computer, networking or communications equipment or software.
19. 10 or more internetworked sites in organization.
20. 1,000 or more employees in organization.
21. More than $1 billion in total company sales.
22. Management responsibility/networking or communications job function.

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PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Tandberg Data's new Panthers to back up Macs

Tandberg Data, Inc. last week launched several new models in its Panther ¼-in. tape backup line that are designed to back up Apple Computer, Inc. Macintoshes positioned as servers in local-area networks.

The new Panthers are compatible with the Macintosh SE, SE 30M, II, IICX and IICI models. The backup system is linked to the Macintosh servers via a Small Computer Systems Interface port. The Panther systems are available in capacities ranging from 150M to 525M bytes, and the company plans to unveil a 1G-byte model in September.

The Macintosh-compatible models offer a backup/restore rate of 5M to 125M byte/min for minimum to maximum capacity models. Prices for the Macintosh-compatible Panther models range from $2,145 for a 150M-byte model to $2,695 for a 525M-byte model.

Tandberg Data, Inc., 2649 Townsgate Road, Suite 600, Westlake Village, Calif. 91361; (805) 495-4186.

Firm takes wraps off asynchronous server

Computer Knowledge Corp. recently announced an asynchronous communications server that enables as many as 64 users to dial into a Novell, Inc. NetWare local-area network from a remote location. Remote users dial into the network and log onto the NetWare LAN, gaining access to services as if they were locally attached.

The **MultiUser II-ACS** supports remote links at speeds up to 19.2K bit/sec. The device is a nondedicated unit that can be positioned as both an asynchronous communications server and a file server for local users.

Pricing for the MultiUser II-ACS ranges from $16,500 to $54,000 for configurations supporting between eight and 32 users. High-end systems that support 64 users cost under $100,000.

Computer Knowledge Corp., 39 W. 14th St., New York, N.Y. 10011; (212) 727-2880.

SNA Gate upgrade supports concurrent file transfers

Netlink also provides new configuration options.

RALEIGH, N.C. — Netlink, Inc. last week announced a new software release for its SNA Gate protocol conversion product that provides enhanced file-transfer support and expanded configuration options.

The SNA Gate is available with eight to 16 ports (expandable in increments of two) and enables asynchronous ASCII, Binary Synchronous Communications 3270 and BSC 2780/3780 devices to access IBM Systems Network Architecture hosts. The machine appears to the hosts as a PU Type 2 device and can support as many as 255 sessions.

Release 2 of the software for the SNA Gate adds support for multiple concurrent file transfers between attached devices and an SNA host. It makes it possible, for example, for personal computers to transfer files in remote job entry batch mode to an IBM host.

The new configuration options in this release are designed to make it easier for users to tailor the box to their specific environments, according to Michael Bowman, Netlink's vice-president of marketing.

The options expand on existing tools and make it possible, for instance, for users to adjust BSC line configuration parameters to accommodate different types of equipment.

These configuration options also include an enhanced set of tools for mapping asynchronous devices into SNA.

Release 2 of the SNA Gate software is available now and is free to current users. Prices for an eight-port SNA Gate start at $4,000.

For more information, contact Netlink at 3214 Spring Forest Road, Raleigh, N.C. 27611, or call (919) 878-8612.

Avatar unveils offerings to link Macs into SNA nets

HOPKINTON, Mass. — Avatar Corp. recently announced a series of products designed to link Apple Computer, Inc. Macintoshes to IBM Systems Network Architecture environments.

The company introduced two new switch-selectable 4M/16M bit/sec token-ring adapter boards that enable Macintosh SE/30 and Macintosh II microcomputers to attach to IBM Token-Ring Networks in order to access IBM hosts. Previously, the company only supported a 4M bit/sec token-ring connection.

MacMainFrame 16/4 MB Token Ring Workstation provides a Macintosh user with the ability to support as many as eight IBM 3270 sessions simultaneously over a token ring. The MacMainFrame 16/4 MB Token Ring Gateway version enables Macintosh users in an AppleTalk environment to run host applications on an IBM mainframe attached to a token ring. The gateway supports 64 3270 sessions per server and as many as eight concurrent 3270 sessions per user.

MacMainFrame 16/4 Token Ring Workstation also enables a Macintosh to communicate with other personal computers attached to the token-ring local-area network.

Both products are expected to ship in the third quarter.

MacMainFrame 16/4 Token Ring Workstation costs $1,395 and includes the token-ring card and MacMainFrame 3270 software. Pricing for MacMainFrame 16/4 Token Ring Gateway is based on the number of host sessions supported. A configuration supporting eight sessions costs $2,495, the 32-session version costs $4,495, and the 64-session model costs $6,495.

Avatar also announced MainPrint CG, a stand-alone device that enables low-end printers to emulate IBM high-end printers and output mainframe files.

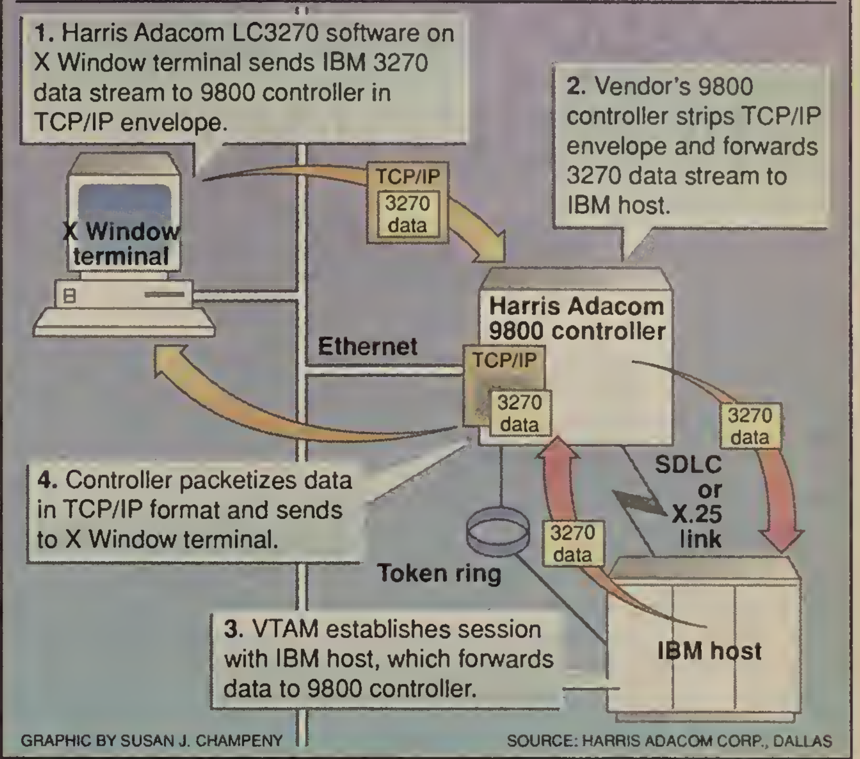
MainPrint CG is connected to a LAN server via a serial connection and to a local printer via a parallel port. The device is linked via a coaxial cable connection to an IBM 3174, which enables terminals to use a printer attached to the MainPrint CG unit.

The device emulates IBM 3287, 3262, 3268 or 4224 system printers and outputs mainframe files to any of more than 400 personal computer printer models.

MainPrint CG is available now and costs $995.

For further information, contact Avatar at 65 South St., Hopkinton, Mass. 01748, or call (508) 435-3000.

Harris Adacom gives X terminals 3270 power



1. Harris Adacom LC3270 software on X Window terminal sends IBM 3270 data stream to 9800 controller in TCP/IP envelope.

2. Vendor's 9800 controller strips TCP/IP envelope and forwards 3270 data stream to IBM host.

3. VTAM establishes session with IBM host, which forwards data to 9800 controller.

4. Controller packetizes data in TCP/IP format and sends to X Window terminal.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: HARRIS ADACOM CORP., DALLAS

Firm to unveil 3270 link for X terminals

Harris Adacom package enables X Window users to set up multiple 3270 sessions with an IBM host.

DALLAS — Harris Adacom Corp. this week will announce a combination hardware/software package that enables X Window System workstations to establish multiple IBM 3270 emulation sessions with IBM hosts.

The vendor's Supernet Strategy 9800 Multi-Window Display Station System is designed to serve users who need to support concurrent full-screen 3270 sessions on a single workstation, according to Marilyn Black, Harris Adacom's marketing manager.

Harris Adacom is positioning the offering as an alternative to IBM 3290 terminals, which are large, flat-screen plasma displays with high-quality picture resolution that support multiple 3270 sessions. Harris Adacom's system provides not only multisession access to IBM hosts, but also concurrent access to non-IBM hosts.

Black said the system is especially suited for transaction processing, network administration, help desk, technical support and any other applications that require users to toggle among screens.

The Supernet Strategy 9800 Multi-Window Display Station System is actually several existing Harris Adacom hardware components tied together via software.

The 9800 Multi-Window Display Stations are X Window System workstations manufactured by Network Computing Devices, Inc., a Mountain View, Calif., maker of X Window terminals.

Each 9800 Multi-Window Display Station supports as many as 16 3270 sessions concurrently with the ability to display four active full-screen 3270 sessions simultaneously.

The X Window System terminals are linked to a Harris Adacom 9800 Communications Controller, an IBM 3174-compatible device.

The 9800 controllers are available in two configurations: the 9870, which provides host access for as many as 64 9800 Multi-Window Display Stations; and the 9874, which provides access for 64 X Window display stations and 64 3270 coaxial cable-attached devices.

The 9800 Communications Controller attaches to an IBM host via a token-ring connection, a 128K bit/sec Synchronous Data Link Control line or a 64K bit/sec X.25 link. The controller can communicate with as many as four hosts at one time, providing support for as many as 254 logical 3270 sessions concurrently.

Harris Adacom minimizes network traffic by initiating a 3270 session in the X Window System terminal (see graphic, this page).

Pricing ranges from $12,000 to $20,000 for the 9800 Communications Controllers, and terminal pricing ranges from $2,200 to $4,500.

For further information, contact Harris Adacom at 16001 Dallas Pkwy., Dallas, Texas 75248, or call (214) 386-2000.

OPINIONS

NETWORK MANAGEMENT

BY JEFFREY KAPLAN

Support is key to technology's success

This spring, a flurry of vendor announcements focused on solving users' multivendor network management problems. Yet instead of being dazzled by these claims, users are realizing that no vendor or group of vendors can truly solve today's net management problems through technology alone.

While many industry analysts have been immersed in debate over the costs and benefits of the network and systems management approaches of such vendors as IBM, Digital Equipment Corp. and Hewlett-Packard Co., few have raised the issue of continuing concern to users: Can these product offerings, in and of themselves, really solve users' network management problems? Experienced network administrators have heard all the vendor promises before. International standards, open systems and new networking technology, they have been told, will make it easier to tie together and manage their multivendor nets. Yet the landscape is littered with examples of technological solutions that failed to meet user needs.

> The landscape is littered with solutions that failed to meet user needs.
>
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An experience I had during the mid-1980s illustrates this well.

At that time, computer-to-private branch exchange connectivity was a big issue; every major computer manufacturer was acquiring or aligning itself with a PBX manufacturer. During that time, I visited the PBX connectivity test facility of a major office automation vendor, where they had tied together a dozen PBXs with their own computer equipment.

After the company's executives proudly pointed out that their computers could communicate with each PBX, they admitted that they could not get each PBX in the facility to talk to every other. This revelation came despite the fact that each PBX had been designed to comply with commonly accepted industry and international standards, beginning with RS-232 interfaces.

Even today, the network management issue is dominated by proprietary solutions being promoted as de facto standards. As a result, users must weed their way through the morass of conflicting claims from the vendors competing in this marketplace.

But they shouldn't dwell on the technological differences between the vendors' varying systems. Instead, users should focus on the services component of this issue. Specifically, they should seek out vendors that have combined a technologically sound network management approach with a solid support strategy. In other words, users should investigate how much emphasis their vendors actually place on supporting the technology they've developed.

To do this, examine how your network management vendor deploys its field support organizations. Where are they located? How close are they to your primary locations? Ask what guaranteed response time they will provide to ensure that your organization will not suffer from extended downtimes resulting from network failures. What kinds of penalties are they willing to pay when network failures do occur? And find out how other customers in your area rate the vendors you are considering.

The answers you get to these questions will tell you more about the vendor's ability to meet your needs than vague promises about their technology.

Kaplan is a director with Ledgeway/Dataquest, a market research and consulting firm in Framingham, Mass.

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EDITORIAL

TCP/IP solves problems for users waiting on OSI

For too long, the Transmission Control Protocol/Internet Protocol suite has been viewed as communications software of interest only to universities and research laboratories. Actually, it is a powerful tool for connecting disparate systems.

Developed by the Internet community in the mid-1970s, TCP/IP is now gaining a following among business users. Indeed, Advanced Network & Services, Inc., the firm operating the National Science Foundation Network, last month created a subsidiary to sell TCP/IP backbone network services to commercial customers.

In this newfound interest in TCP/IP comes in part because users are growing tired of waiting for the International Standards Organization's Open System Interconnection protocol. The growing number of commercial users counting on TCP/IP has forced major vendors to embrace TCP/IP more fully than they had originally intended.

For example, last month, Digital Equipment Corp. scrapped its plan to migrate directly from its proprietary DECnet Phase IV to an OSI-based DECnet Phase V. Because users have been vigorously demanding increased TCP/IP support, DEC said it would bundle support for that protocol with DECnet Phase IV and support for OSI in a new product called Advantage Networks.

IBM has struck alliances with vendors well-versed in TCP/IP and is beefing up its internal TCP/IP and OSI development. These moves can only mean TCP/IP will play a role in the future of IBM's Systems Network Architecture.

While TCP/IP and OSI provide many of the same features, the discussion of which one better suits users' needs is clearly a holy war, with zealots on both sides of the issue.

For instance, TCP/IP already enables desktop devices running MS-DOS, Unix or OS/2, and larger systems running proprietary operating systems, to exchange files using applications supporting the File Transfer Protocol.

OSI will provide the same function with File Transfer, Access and Management (FTAM). Unfortunately, FTAM applications have not always worked well together. About a dozen users are testing interoperability between different vendors' FTAM packages and finding some incompatibilities.

Encountering a few problems with early applications doesn't mean that users should forget about OSI. It does mean, however, that users waiting for OSI shouldn't be afraid to experiment with TCP/IP while the kinks in OSI still are being worked out.

PUBLIC NET INVESTMENT

BY MARY JOHNSTON-TURNER

Users, speak now or forever hold your peace

Recently, J.C. Penney Company, Inc. stood up to be counted as an early adopter of the Integrated Services Digital Network Primary Rate Interface (PRI). Its mission: to cajole the local exchange carriers into rapid tariffing and deployment. Its dilemma: to buy service from interexchange carriers or make private network investments.

J.C. Penney believes there are cost, performance and reliability benefits in using public network resources. Harvard University, which has made major commitments to Nynex Corp.'s ISDN-based central office services, agrees.

Despite these endorsements, local public exchange carriers lost significant ground with high-end users during the last decade. These users are typically national or international in scope and have been early adopters of various new technologies.

In the next ten years, these same users will lead the industry in the use of multimedia, intelligent agent applications and next-generation wireless communications.

Why have local carriers lost ground in this key user segment? Several factors are involved:

- Lack of reliable service for mission-critical data applications.
- Lack of a competitive, internal cost structure that translates into noncompetitive tariffed prices.
- Antiquated work procedures that make it difficult to respond to customer demands rapidly.
- Failure to deploy new technologies quickly enough to meet the needs of early adopters.
- Lack of account control and positioning with data network managers.
- Lack of rapid tariff approvals by some state regulatory authorities.

Unfortunately, the local telephone companies have largely allowed their technology assessment, tariff development and market rollout traditions — geared to 20-year life cycles — to hamstring their technology investment decisions. With today's customer premises equipment market seeing a new generation every three years, this lack of response to user needs is unacceptable.

The result is that good network technologies hit the market too late for their initial targets. The delay-plagued rollout of narrowband ISDN is a prime example.

Good network technologies hit the market too late for their initial targets.

▲▲▲

This technology is still being deployed and marketed as a high-end business offering. But in reality, much of narrowband ISDN's usefulness to high-end users has been eclipsed by newer, data-oriented services, such as private router and bridge networks, frame relay and Switched Multimegabit Data Service (SMDS). The current constituency of narrowband ISDN includes smaller businesses and residential users.

Today, the local exchange carriers stand at an important crossroads as they debate the demand, pricing and provisioning timetables for next-generation services. There are signs that the same paralysis that delayed ISDN is about to short-circuit the rollout of these new services.

Users and many customer premises equipment vendors are expecting a wide range of dynamic, data-oriented network services to become available during the next two years.

If delivery of these services is delayed or cancelled due to telephone company reluctance to invest in unproven markets, leading-edge users will go elsewhere. And should today's leaders seek other avenues, so will their mid-tier followers later in the decade. In the end, the telephone companies will lose almost all their users as alternatives become mainstream.

For investors interested in short-term returns, the bias is to delay network investment until demand is proven. But withholding investment decisions until a proven market has developed will not serve the best interests of local telephone companies and their users. Investing proactively and partnering with early adopters to better understand how users will implement the offering will serve everyone's interests.

Those interested in using the public net as a key part of their architecture in the 1990s must step in now to break the logjam. Just as J.C. Penney has shown its willingness to act as a lightning rod for ISDN PRI, others that are serious about including the local public network in their 1990s network architectures should apprise their key telephone companies of their plans. Passively assuming that these technologies will be deployed could doom the industry to more delays and disappointments.

Local telephone companies need strong incentives to invest in narrowband technologies, such as ISDN, and higher capacity systems, such as 802.6 metropolitan-area networks. It will be a win-win situation for all if telephone companies can deploy new technologies fast enough to meet user requirements at competitive prices.

Users, it's time to get the word out to the phone companies that the business is there for the taking. ▣

Johnston-Turner is a principal with Northeast Consulting Resources, Inc., a Boston consulting firm that focuses on strategic management and information technologies.

TELETOONS

BY FRANK AND TROISE

Now,.. let me get this straight.. if I'm a network consultant and you're a vendor and she's your attorney and you're from the government, then we've been meeting all this time without a client?

LETTERS

News on securities nets

Your recent articles "SIA officials detail plans for national securities net" and "Securities net managers discuss value of technology" (*NW,* June 17) were both informative.

I thought your readers might be interested to know that the Board of Trade Clearing Corp. is developing A Real-Time Communications System (ARCS), which will enable clearing member firms to transmit and receive transactions in a real-time mode using IBM's Advanced Program-to-Program Communications LU 6.2 procotol.

ARCS will provide brokerage firms and stock exchanges with integrated solutions to manage their trading information, such as positions, executions, margins and risk management. The proprietary system approach provides firms with control over system maintenance, security and data integrity.

But the various proprietary interfaces and multiple communications links with brokerages and exchanges pose problems such as implementation with multiple software and hardware systems, in addition to initial start-up costs. The long-term plan is to have control over cost and system updates within the information systems departments.

Convincing the brokerages and clearing organizations to migrate to a shared network would eliminate the competitive edge for customer service and take away part of their strategic commodity items.

Robert Lorz Jr.
Programmer/analyst
Board of Trade Clearing Corp.
Chicago

Editor's note: Network World *recently ran an article about the Clearing Corp.'s ARCS network. For more in-*

(continued on page 48)

Network World *welcomes letters from its readers.*

Letters should be typed and double-spaced. Mail them to Editor, Network World, *161 Worcester Road, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.

LIKE ALLIGATORS IN A SWAMP, unforeseen problems can really put the bite on a communications operation. Many managers find themselves wrestling with these networking reptiles every day.

If you've survived an "alligator attack," share it with our readers by calling Susan Collins, associate features editor, at (508) 820-7413 or fax your idea to us at (508) 820-3467. Alligators should be 1,200 words in length and submitted either on disk or via modem.

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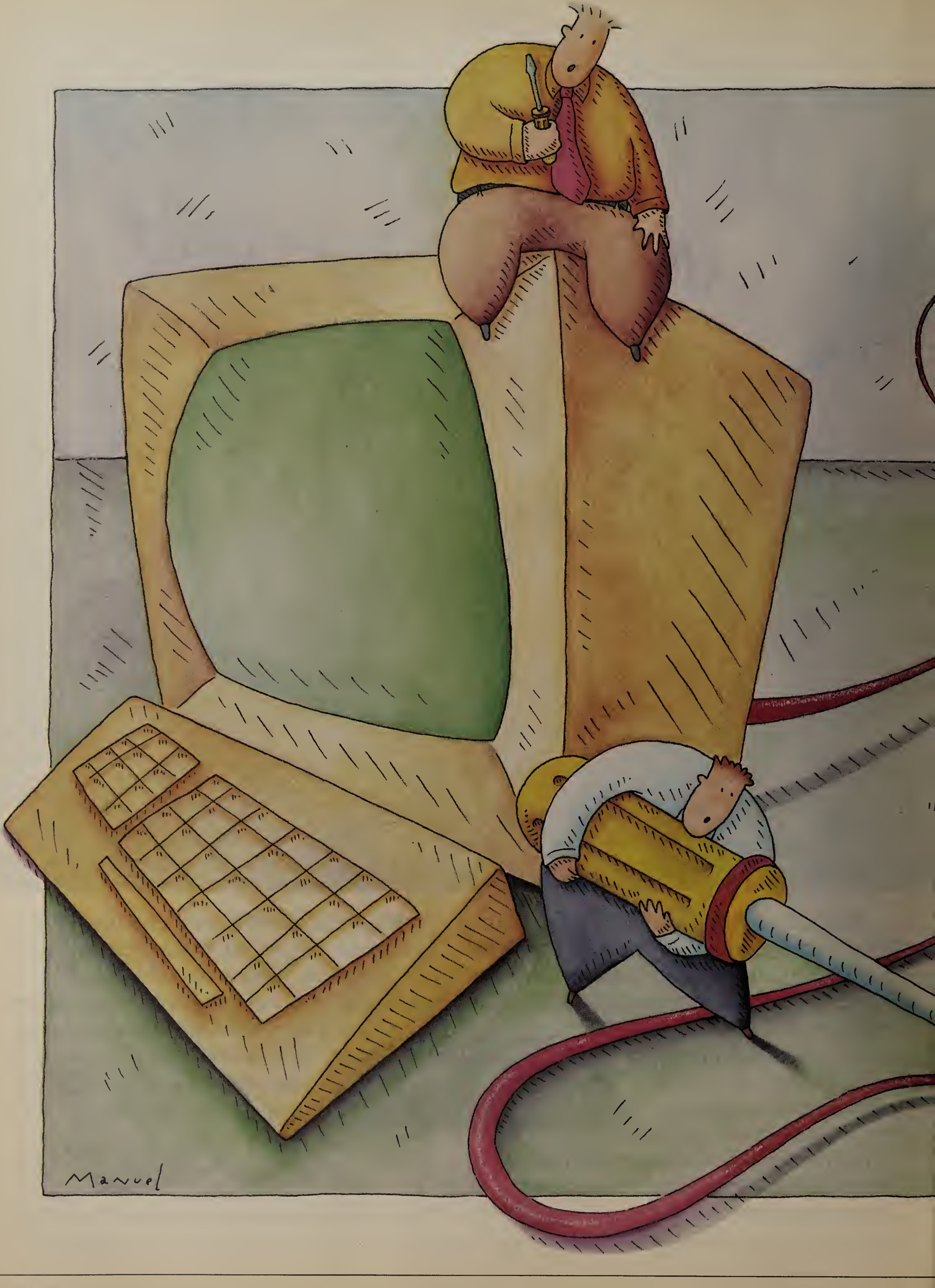
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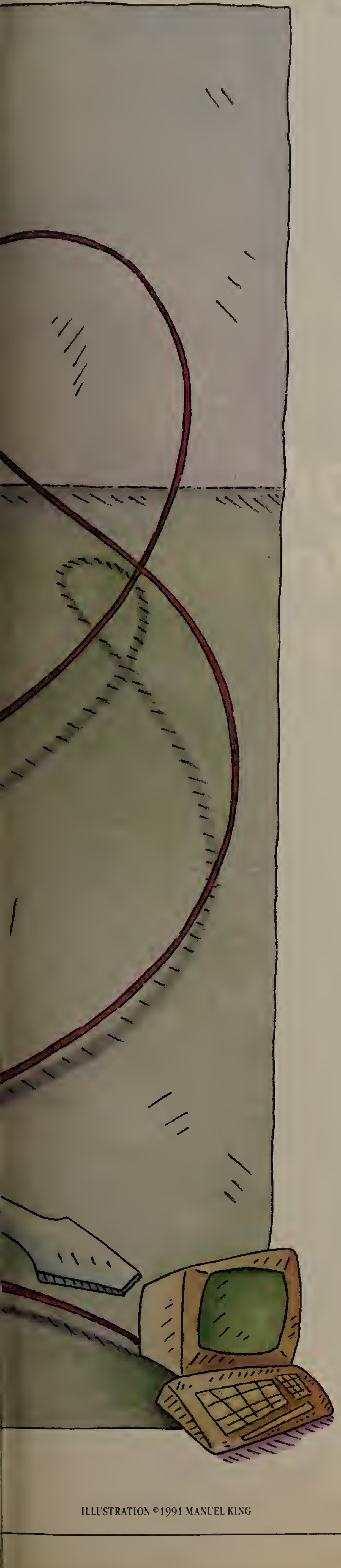

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Picking the right tool for the job

Three factors — LAN makeup, LAN functions and the type of administrator — determine the kind of LAN management tools best suited to an organization.

CONTINUED FROM PAGE 1

In some companies, LAN management rests with a single individual; in others, it is handled by a team. Some LANs are maintained by administrators devoted entirely to that task, while others are managed by individuals whose primary duty isn't LAN management.

These factors — the LAN's makeup, the functions it performs and the type of administrator who oversees it — largely determine the type of LAN management tools best suited to an organization.

For example, managers of heterogeneous LANs need tools that can manage multiple vendors' equipment and protocols. "If you're not using a single-vendor approach for your computing environment in general, why should you be forced to use a single-vendor approach for network management?" asks John Toney, vice-president of technical development for NETinc, a Houston-based management software developer.

Conversely, administrators whose main responsibility is not LAN management need tools that perform basic management functions well and don't require special skills to be used.

This article will discuss some important LAN management standards, products that incorporate these standards and the type of LAN managers to whom they're best suited.

Guengerich is director of publishing and editor-in-chief of technical journals at Houston-based Business Systems Group, Inc., a systems integration firm specializing in planning, implementing and managing networks and distributed applications. Volino is a consultant at the Enterprise Technology Center, Inc., a multivendor systems integration showcase and testing facility, also based in Houston.

SNMP

For the past two years, the Simple Network Management Protocol (SNMP) has been the predominant management standard for LANs. SNMP provides vendor-independent communications between network devices through a combination of two key elements — the Management Information Base (MIB) and the protocol itself.

The MIB is a data base that contains definitions and attributes of network devices as well as a list of the data that any implementation of SNMP can request from each device's agent. Vendors may create extensions to the MIB to support particular features of their equipment.

Current implementations of SNMP generally rely on the four-layer User Datagram Protocol (UDP)/Internet Protocol to communicate with network devices' SNMP agents. By using UDP/IP, SNMP can operate in a connectionless mode in which datagrams that transmit information are sent without necessarily establishing a session with the intended recipient in advance.

Internet's primary network protocol is the Transmission Control Protocol/IP, so it is not surprising that SNMP has been used largely in conjunction with Ethernet and TCP/IP networks. However, since UPD/IP is used only for shuttling SNMP-related data itself, the standard can just as easily be employed to manage networks whose applications use other media and protocols, such as token ring and Fiber Distributed Data Interface.

High-end SNMP products are mainly targeted toward managers of large, dynamic, heterogeneous networks. These tools are primarily intended for managing internetworks that may have thousands of nodes. (The chart on page 48 lists various types of LAN management products currently available.)

Typically, these tools have an open architecture to permit the addition of new services and communications with devices from multiple vendors. To handle such an enormous task, these systems generally require the horsepower of a dedicated Unix workstation such as those made by Sun Microsystems, Inc.

High-end LAN management offerings include Cabletron Systems, Inc.'s Spectrum, Chipcom Corp.'s ONline Network Control

(continued on page 37)

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(continued from page 35)

System, Hewlett-Packard Co.'s OpenView, Hughes LAN System's 9100 Network Management Center, Proteon, Inc.'s OverView, Sun's SunNet Manager and The Wollongong Group, Inc.'s Management Station.

Prices for these systems vary widely depending on the configuration desired and the number of devices to be managed. You can count on paying at least $6,500 (Chipcom's price for a 12-concentrator ONline license) to more than $50,000 (Spectrum's base price).

Spectrum's abilities

Spectrum's unique feature is its use of inductive modeling. This technique enables the management device to "infer" information based on the status of the devices to which cables are connected. Spectrum also uses an expert system to attempt to find out or at least narrow down the cause of LAN faults in situations where a chain of errors is being reported to the management console simultaneously.

While Cabletron is positioning Spectrum as a platform into which future extensions can be plugged, other vendors are taking a slightly different approach.

HP and Sun, for instance, present their OpenView and SunNet Manager, respectively, as platforms on which specific management solutions can be built. Both products have similar features, including application program interfaces (API) and facilities for importing vendor MIB extensions.

A number of vendors have used OpenView and SunNet as foundations for their own LAN management products. For example, SynOptics Communications, Inc.'s LattisNet Network Management for Unix and Racal InterLan, Inc.'s LANcentral Express use SunNet as a base, while IBM has licensed OpenView for its RISC System/6000 platform.

According to Larry Quinlan, manager of LAN services for Deloitte-Touche, even these powerhouses focus too much on the physical side of the net.

Quinlan says Deloitte-Touche, which has 200 networks spread across 100 sites, would like to view all resources available to users, including file and print servers.

"We'd like to have the ability to roll up management information by defining domains on which we can view statistics," Quinlan says. "For instance, if a print server shuts down somewhere, we'd like to see that on a log in one place so we can start it back up." None of the current crop of systems provides this capability, he notes.

A second tier of SNMP LAN management products that run on DOS and OS/2 workstations offer much the same functionality as the high-end packages, but generally are limited in their ability to fully manage devices other than the vendor's own. These products are mainly targeted at users of smaller, homogeneous networks.

These tools primarily work in conjunction with a smart hub or bridge system to provide remote polling and configuration capabilities. Graphical user interfaces are provided by Microsoft Corp.'s Windows 3.0 or IBM's Presentation Manager.

Several of these systems use SNMP agents and provide similar features, including automatic or assisted mapping, setting of alerts and usage monitoring. Because they are largely linked to a certain product line, what ultimately distinguishes them are the media and protocols supported by the vendor's network devices.

For example, Cabletron's $4,995 Remote LANView/Windows works with the company's line of Ethernet and token-ring network interface cards, hubs and bridges. Network Application Technology, Inc.'s NMS/100 currently manages the firm's own local and remote bridges as well as its Ethermeter Ethernet traffic monitors.

Notably, Network Application Technology has announced that support for third-

(continued on page 39)

Dealing with LAN-to-WAN issues

As if managing local-area networks and internets wasn't enough to handle, today's LAN administrators must deal with the implications of connecting to wide-area networks. WANs typically operate over leased lines, where data speeds that match LAN media may not be available due to their expense. If an installation's WAN link operates at slower speeds than the rest of the LAN, it can quickly become a bottleneck if access to it isn't monitored and controlled.

A potential source of trouble could be a user trying to access a large file, such as an application program, which resides on a server across the link. Another example could be the exchange of routing table updates, which can also tie up lines with bulky information.

Network administrators must watch out for these problems. Sometimes, intervention may be as simple as tracking down the offending workstation and restricting access to the link. Ultimately, a good strategy involves making sure that resources are evenly distributed across the WAN and that the size of data transfers is minimized whenever possible.

— Steven Guengerich and Judd Volino

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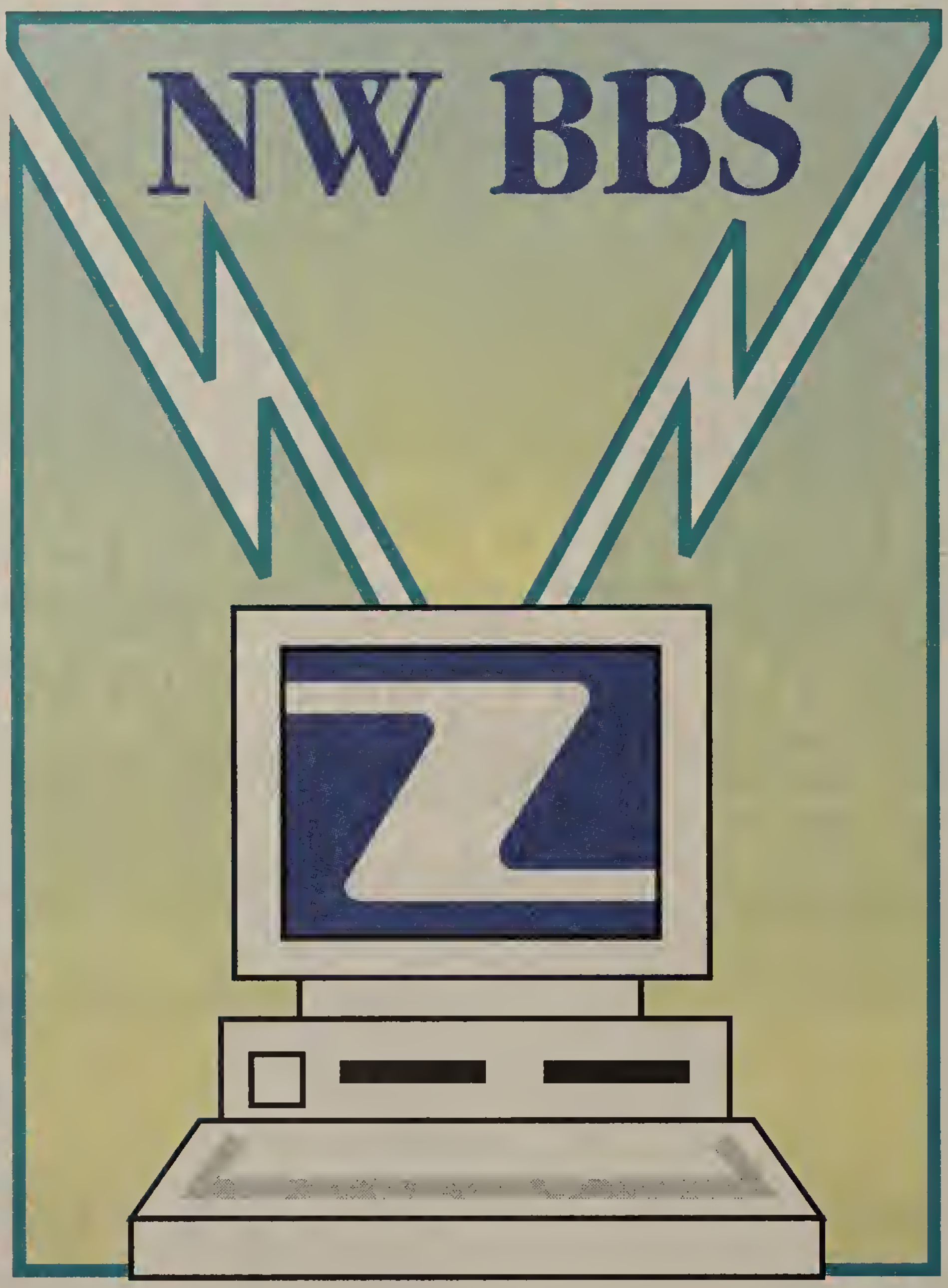

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(continued from page 37)

party vendors' SNMP-compatible devices will become available this fall. An NMS/100 kit, including software and the company's Ethernet adapter, lists for $2,995. The $4,995 version adds a 386-based CPU with the software preinstalled.

HP brings its OpenView technology to a pair of management tools — HP OpenView Bridge Manager, which costs $1,999, and HP OpenView Hub Manager, which costs $1,500. Besides providing management capabilities, these two software tools permit other vendors' network devices to be added to the network map with their autodiscovery function.

SynOptics' $2,995 LattisNet Basic Network Management package supports SynOptics' own token-ring and Ethernet concentrators.

In addition, through the use of the system's Generic SNMP Application and third-party vendor extensions to the MIB, the LattisNet Basic Network Management package can manage other vendors' devices. The Lattisnet Advanced Network Management package, which lists for $5,500, can automatically create network topology maps.

Two solutions designed especially for token-ring LANs are IBM's $3,995 LAN Network Manager and Madge Networks, Inc.'s $3,195 Ring Manager II.

LAN Network Manager runs under OS/2 Extended Edition and manages the network using IBM's LAN Station Manager, which catalogs workstation configurations, and IBM's 8230 Controlled Access Unit (CAU) concentrator.

Working in conjunction with the CAU, LAN Network Manager can automatically detect and disconnect the device in the event of failures on the token ring at the media or concentrator level.

In addition to its bridge management capabilities, Ring Manager II collects and reports extensive information to the system administrator through its event and alert logs. Entries in the event log are accompanied by context-sensitive help that can aid in isolating sources of problems on the network.

Novell provides an Ethernet hardware/software combination with its $4,495 LANtern concentrator module and $4,995 LANtern Services Manager application. A 32-user version of the module, the LANtern LTD, is available for $2,495. The Windows-based LANtern Services Manager acts as a graphic interface for monitoring, alarm control and mapping functions.

Although the LANtern concentrator module communicates with the Services Manager through SNMP, the system can acquire data about any device on an Ethernet segment by watching network packets, even if the device does not contain an SNMP agent. The Services Manager can also communicate with the LANtern module through a modem in the event of severe network failure.

CMIP/HLM

Although SNMP fulfills many immediate LAN management needs, it was not intended as a long-term solution. Some LAN managers and vendors see the Common Management Information Protocol (CMIP) as the ideal network management standard.

CMIP, which is a full-scale management protocol unlike SNMP, was designed as part of the International Standards Organization's Open Systems Interconnection model. It defines an additional five layers beyond the basic physical and data link foundation layers of the OSI model. Like SNMP, it also depends on a MIB to provide the link between standardized information requests and actual network agents that respond to these requests.

CMIP's relatively recent arrival — it received final approval late last year — means that actual product development has only just begun. In addition, many developers consider a full implementation of CMIP impractical because of its large memory requirement.

However, IBM and 3Com Corp. have joined forces to produce a specification for partial CMIP implementation. Their Heterogeneous LAN Management (HLM) specification is based on a "short stack" approach called CMIP over Logical Link Control, which involves only the physical and data link layers of the OSI model.

IBM's goal is to incorporate HLM into the network management protocol being developed by the IEEE 802.1 committee. The committee accepted a draft of the HLM specification last November, and copies were sent out for ballot comment after its March meeting. This month, these comments will be compiled and a standards ballot issued. Depending on the outcome, HLM could be approved by year end.

Clearly, the key advantage that SNMP holds for LAN management purposes is that products are available now. Yet ironically, by enabling vendors to add their own MIB extensions, SNMP could promote the development of product-specific implementations that hamper truly vendor-independent management efforts.

Both SNMP and HLM offer a compact implementation in terms of memory requirements. But this memory constraint limits their functionality when compared to CMIP. HLM, for instance, currently cannot travel across routers.

Users, however, should realize that choosing an SNMP-based system today doesn't necessarily preclude using CMIP on that system tomorrow. Many SNMP tool vendors, including Cabletron, Hughes, Proteon and Wollongong, have pledged to add CMIP support to their product lines, but exactly when they'll do so is still a

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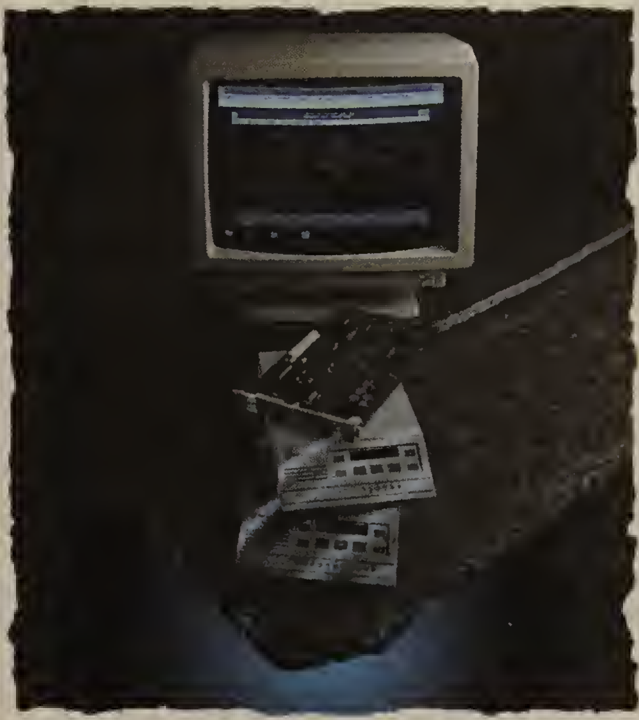

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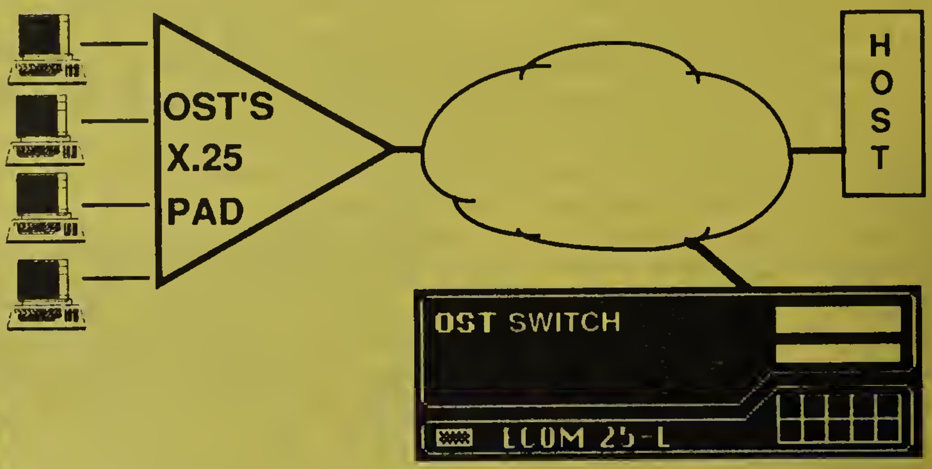

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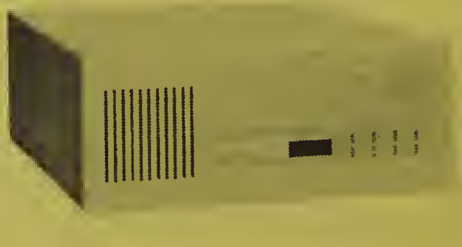

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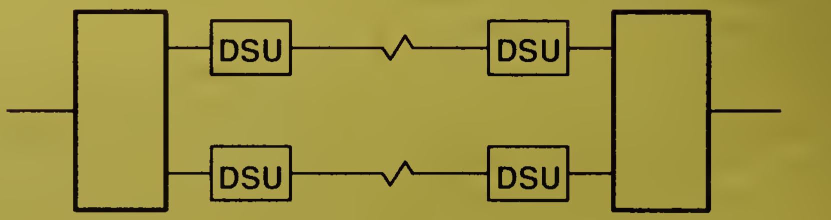

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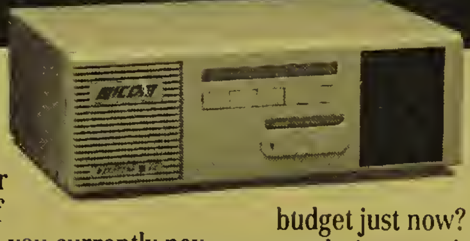

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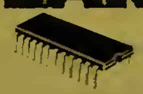

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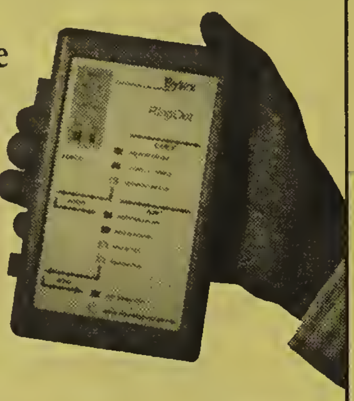

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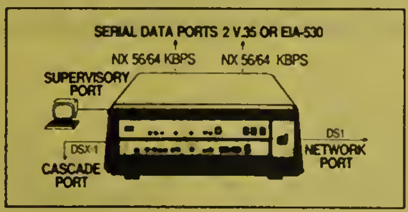

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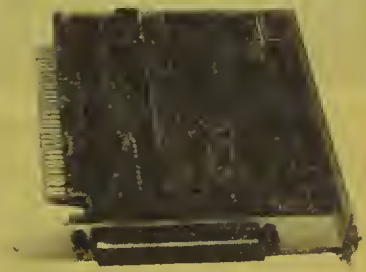

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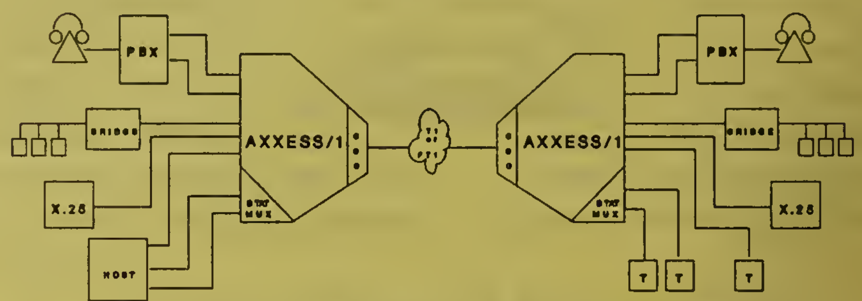

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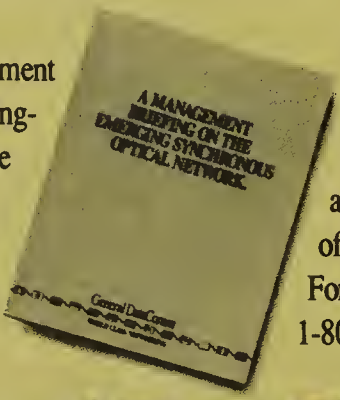
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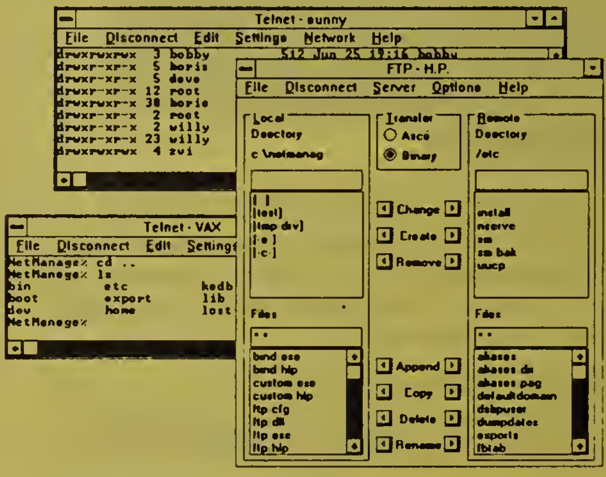

```
drwxrwxrwx  3 bobby      512 Jun 25 13:16 bobby
drwxr-xr-x  5 boris
drwxr-xr-x  5 dave
drwxr-xr-x 12 root
drwxrwxr-x 38 boris
drwxr-xr-x  2 root
drwxr-xr-x  2 willy
drwxr-xr-x 23 willy
drwxrwxrwx  4 zvi
```

```
NetManage% cd ..
NetManage% ls
bin           etc           kedb
boot          export        lib
dev           home          lost
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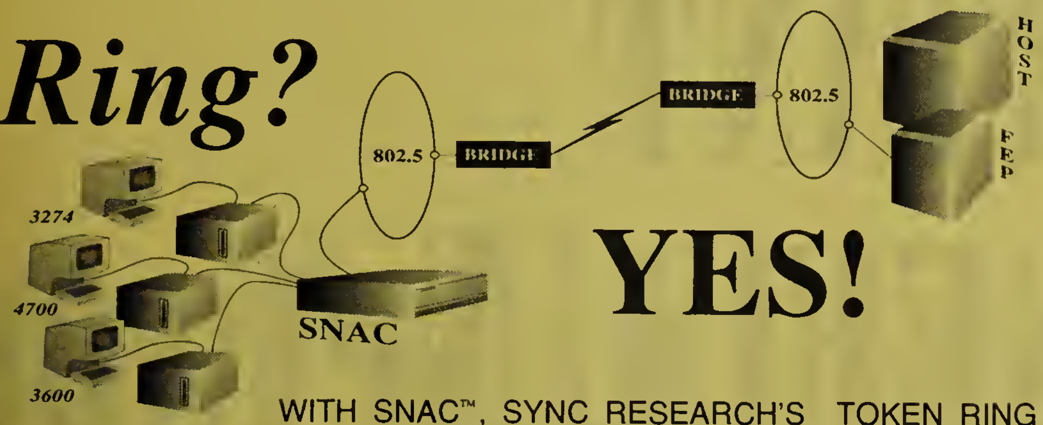

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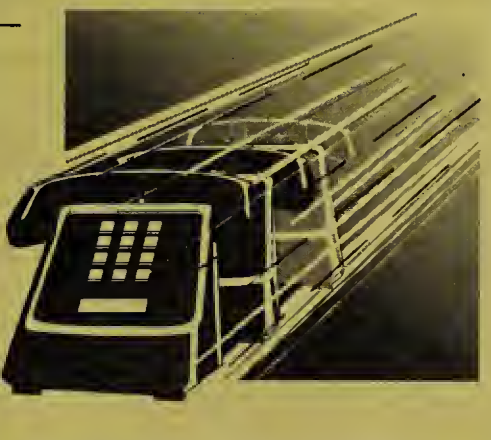

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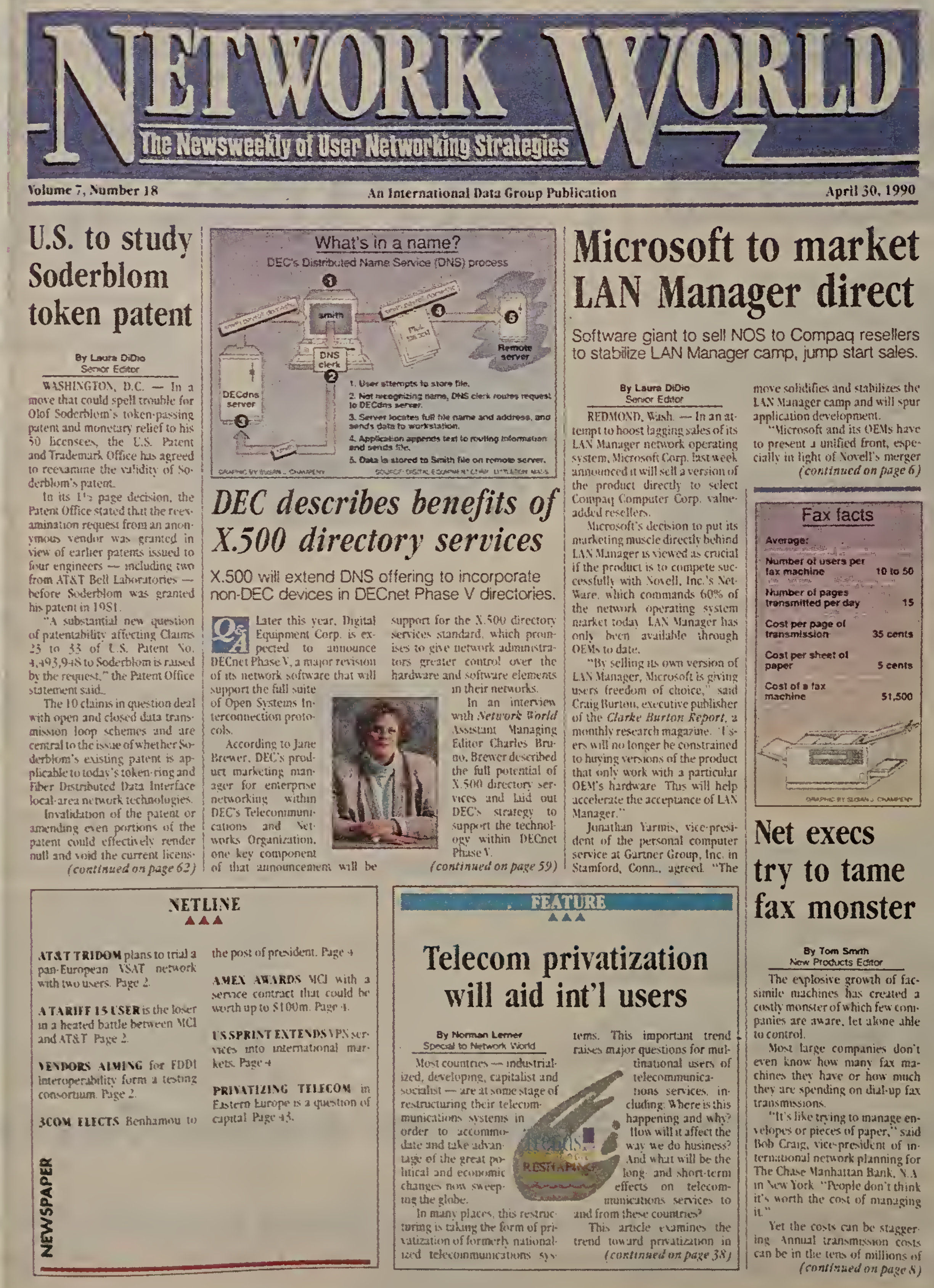

NETWORK WORLD
The Newsweekly of User Networking Strategies
Volume 7, Number 18 An International Data Group Publication April 30, 1990

U.S. to study Soderblom token patent

By Laura DiDio
Senior Editor

WASHINGTON, D.C. — In a move that could spell trouble for Olof Soderblom's token-passing patent and monetary relief to his 50 licensees, the U.S. Patent and Trademark Office has agreed to reexamine the validity of Soderblom's patent.

In its 1½ page decision, the Patent Office stated that the reexamination request from an anonymous vendor was granted in view of earlier patents issued to four engineers — including two from AT&T Bell Laboratories — before Soderblom was granted his patent in 1981.

"A substantial new question of patentability affecting Claims 23 to 33 of U.S. Patent No. 4,493,948 to Soderblom is raised by the request," the Patent Office statement said.

The 10 claims in question deal with open and closed data transmission loop schemes and are central to the issue of whether Soderblom's existing patent is applicable to today's token-ring and Fiber Distributed Data Interface local-area network technologies.

Invalidation of the patent or amending even portions of the patent could effectively render null and void the current licens-

(continued on page 62)

What's in a name?

DEC's Distributed Name Service (DNS) process

1. User attempts to store file.
2. Not recognizing name, DNS clerk routes request to DECdns server.
3. Server locates full file name and address, and sends data to workstation.
4. Application appends text to routing information and sends file.
5. Data is stored to Smith file on remote server.

DEC describes benefits of X.500 directory services

X.500 will extend DNS offering to incorporate non-DEC devices in DECnet Phase V directories.

Q&A Later this year, Digital Equipment Corp. is expected to announce DECnet Phase V, a major revision of its network software that will support the full suite of Open Systems Interconnection protocols.

According to Jane Brewer, DEC's product marketing manager for enterprise networking within DEC's Telecommunications and Networks Organization, one key component of that announcement will be support for the X.500 directory services standard, which promises to give network administrators greater control over the hardware and software elements in their networks.

In an interview with *Network World* Assistant Managing Editor Charles Bruno, Brewer described the full potential of X.500 directory services and laid out DEC's strategy to support the technology within DECnet Phase V.

(continued on page 59)

Microsoft to market LAN Manager direct

Software giant to sell NOS to Compaq resellers to stabilize LAN Manager camp, jump start sales.

By Laura DiDio
Senior Editor

REDMOND, Wash. — In an attempt to boost lagging sales of its LAN Manager network operating system, Microsoft Corp. last week announced it will sell a version of the product directly to select Compaq Computer Corp. value-added resellers.

Microsoft's decision to put its marketing muscle directly behind LAN Manager is viewed as crucial if the product is to compete successfully with Novell, Inc.'s NetWare, which commands 60% of the network operating system market today. LAN Manager has only been available through OEMs to date.

"By selling its own version of LAN Manager, Microsoft is giving users freedom of choice," said Craig Burton, executive publisher of the *Clarke Burton Report*, a monthly research magazine. "Users will no longer be constrained to buying versions of the product that only work with a particular OEM's hardware. This will help accelerate the acceptance of LAN Manager."

Jonathan Yarmis, vice-president of the personal computer service at Gartner Group, Inc. in Stamford, Conn., agreed. "The move solidifies and stabilizes the LAN Manager camp and will spur application development.

"Microsoft and its OEMs have to present a unified front, especially in light of Novell's merger

(continued on page 6)

Fax facts

Average:	
Number of users per fax machine	10 to 50
Number of pages transmitted per day	15
Cost per page of transmission	35 cents
Cost per sheet of paper	5 cents
Cost of a fax machine	$1,500

Net execs try to tame fax monster

By Tom Smith
New Products Editor

The explosive growth of facsimile machines has created a costly monster of which few companies are aware, let alone able to control.

Most large companies don't even know how many fax machines they have or how much they are spending on dial-up fax transmissions.

"It's like trying to manage envelopes or pieces of paper," said Bob Craig, vice-president of international network planning for The Chase Manhattan Bank, N.A. in New York. "People don't think it's worth the cost of managing it."

Yet the costs can be staggering. Annual transmission costs can be in the tens of millions of

(continued on page 8)

NETLINE

▲▲▲

AT&T TRIDOM plans to trial a pan-European VSAT network with two users. Page 2.

A TARIFF 15 USER is the loser in a heated battle between MCI and AT&T. Page 2.

VENDORS AIMING for FDDI interoperability form a testing consortium. Page 2.

3COM ELECTS Benhamou to the post of president. Page 4

AMEX AWARDS MCI with a service contract that could be worth up to $100m. Page 4.

US SPRINT EXTENDS VPN services into international markets. Page 4

PRIVATIZING TELECOM in Eastern Europe is a question of capital. Page 43.

NEWSPAPER

FEATURE

▲▲▲

Telecom privatization will aid int'l users

By Norman Lerner
Special to Network World

Most countries — industrialized, developing, capitalist and socialist — are at some stage of restructuring their telecommunications systems in order to accommodate and take advantage of the great political and economic changes now sweeping the globe.

In many places, this restructuring is taking the form of privatization of formerly nationalized telecommunications systems. This important trend raises major questions for multinational users of telecommunications services, including: Where is this happening and why? How will it affect the way we do business? And what will be the long- and short-term effects on telecommunications services to and from these countries?

This article examines the trend toward privatization in

(continued on page 38)

The results are in and **Network World** is the clear leader. The 1990 Wall Street Journal/ICA Member Study is conducted among members of the prestigious International Communications Association (ICA), an organization whose representatives purchase $16 billion of information technology products and services each year.

Since **Network World** began in 1986, we've maintained a singular focus: to be the most useful source of information for users involved in multivendor, multisite enterprise networks and, in doing so, provide the most value for our advertisers.

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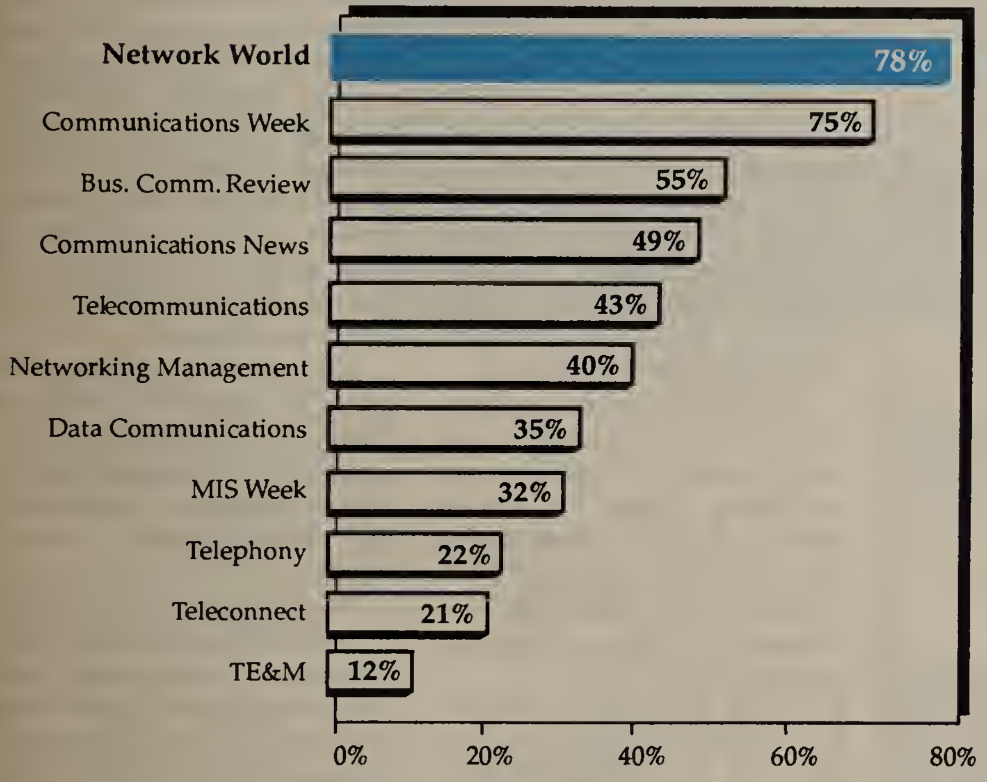
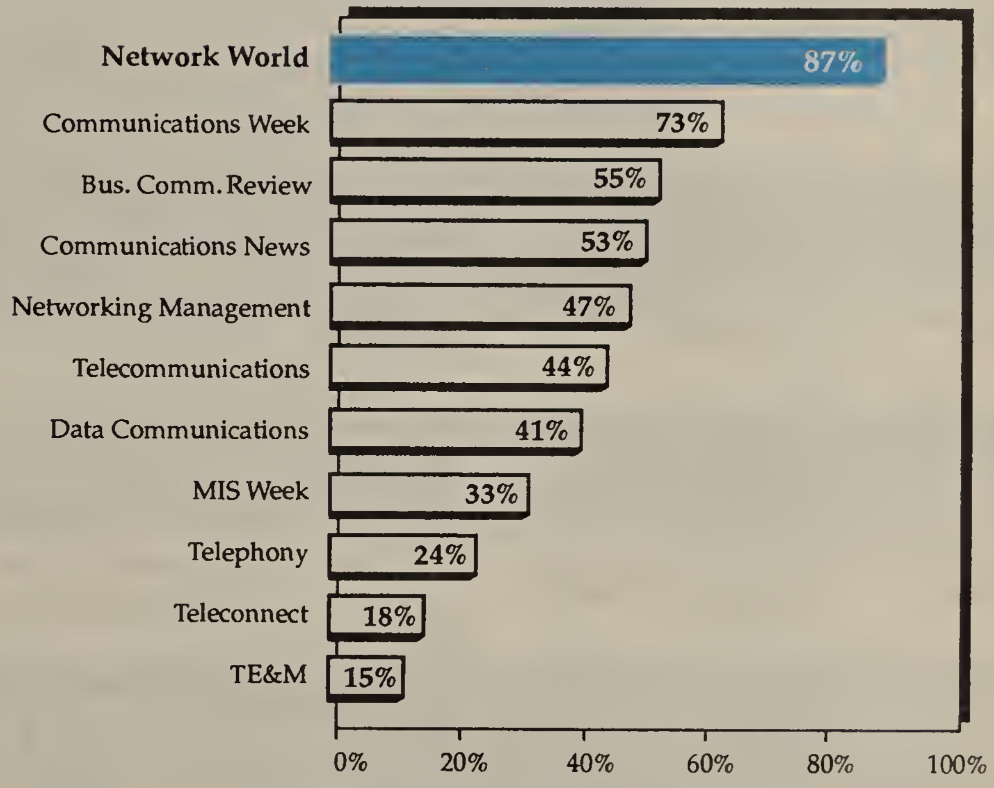
(Among Respondents with Domestic Networks)



Base: 336 Respondents
Regular readership is at least three out of four issues.

International Regular Readership

(Among Respondents with International Networks)



Base: 165 Respondents
Regular readership is at least three out of four issues.

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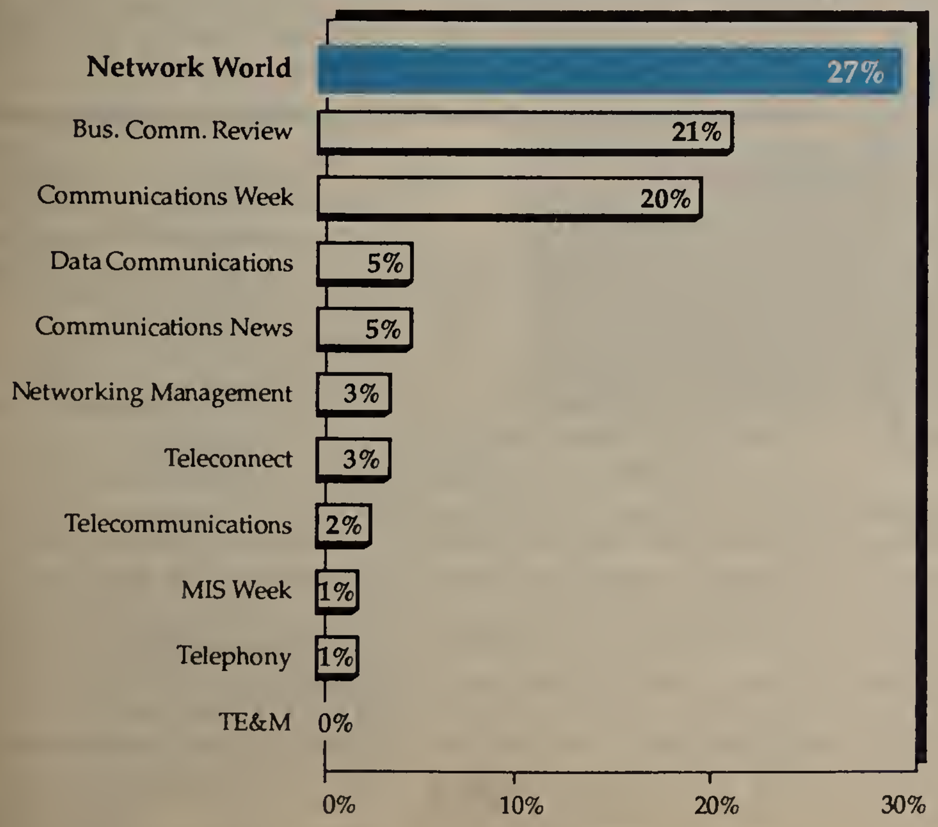
(Among Respondents with Domestic Networks)



Base: 336 Respondents

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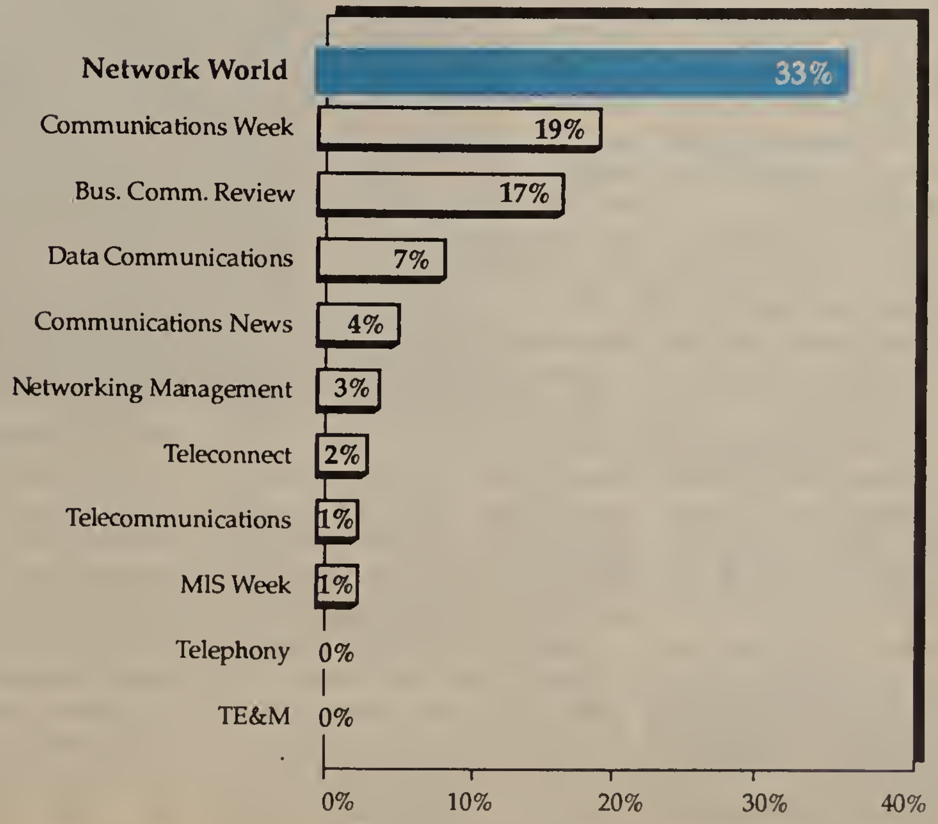
Most Important/Useful

(Among Respondents with International Networks)



Base: 165 Respondents

Source :1990 Wall Street Journal / ICA Member Study

(continued from page 39)

question. Vendors indicate they will introduce products when the standard has matured and when they sense a strong enough user demand.

Ultimately, incorporating HLM or CMIP into management tools that have modular architectures is a relatively straightforward matter. Thus, it is foreseeable that both SNMP and CMIP will coexist, rather than one dominating the field.

LAN management products

Product	Typical function	Examples	Price
Comprehensive: Unix-based, high-end	Simple Network Management Protocol-based, multivendor device support through import of Management Information Base for monitoring, auto topology mapping, fault detection, threshold alarms, device configuration; graphical user interface	Cabletron Systems, Inc.'s Spectrum, Chipcom Corp.'s ONline Network Control System, Hewlett-Packard Co.'s OpenView, Hughes LAN Systems' 9100 Network Management Center, Proteon, Inc.'s OverView, Sun Microsystems, Inc.'s SunNet Manager, The Wollongong Group, Inc.'s Management Station	$6,500 to $50,000
Comprehensive: DOS- or OS/2-based, mid-range	Most of the functions above, but generally limited to single vendor or single protocol/topology environment	Cabletron's Remote LANView/Windows, HP's OpenView for HP bridges/hubs, IBM's LAN Network Manager, Madge Networks, Inc.'s Ring Manager II, Network Application Technology, Inc.'s NMS/100, Novell, Inc.'s LANtern Services Manager, SynOptics Communications, Inc.'s LattisNet Basic Network Management	$2,000 to $6,000
Protocol analyzers (hardware/software combination)	Collect data on network traffic; fault detection; examine packets; with use of remote devices, works across segments	Bytex Corp.'s ATS1000, Network General Corp.'s Sniffer, Spider Systems, Inc.'s SpiderAnalyzer	$10,000 to $20,000
Network monitors (software)	Collect data on network traffic; fault detection	Brightwork Development, Inc.'s ARCmonitor+ and Emonitor+, Fresh Technology Group, Inc.'s NetVision, Network General's Watchdog, Thomas-Conrad Corp.'s TxD	$300 to $2,000
Server administration add-ons	User account maintenance; reports on usage tracking, auditing; integrity monitoring; software licensing; virus protection	Brightwork Development's SiteLock, Frye Computer Systems, Inc.'s NetWare Early Warning System, The LAN Support Group, Inc.'s BindView+, JA Lomax Associates' Lomax Utilities, Network Computing, Inc.'s LANAlert	$300 to $1,000*
Workstation cataloging	Gather workstation hardware and software configuration information	CSG Technologies, Inc.'s SuperVisor, Horizon Technology, Inc.'s LAN Auditor, MAGEE Enterprises, Inc.'s Network H.Q., Technology Works, Inc.'s GraceLAN	$400 to $600*
Menu generators	Assist in building applications and function menus for workstation access to server resources	NETinc's NetMenu, Saber Software Corp.'s Saber Menu System	$300 to $500*

* Prices are usually per server, sometimes with additional tiers based on the number of users.

GRAPHIC BY SUSAN SLATER

SOURCE: ENTERPRISE TECHNOLOGY CENTER, INC., HOUSTON

Not all users believe that standards alone can solve the LAN management dilemma. Some advocate a more pragmatic approach to the issue.

Eric Pulaski, president of The LAN Support Group, Inc., a software development company in Houston, says the best strategy is to choose tools that meet a company's current business needs and not fret about standards that might appear tomorrow.

"Until there is a standard, buy products that work," Pulaski says. "Just make sure you find a reliable vendor whom you can count on to adapt to new specifications as they appear.".

Indeed, there is no shortage of discrete packages that handle particular management functions. Usually, these applications add functionality to that of the network operating system. For example, Origen, from Preferred Systems, Inc., streamlines the process of setting up server and user configurations in Novell NetWare environments.

Clerical staff can enter default setup information off-line then transfer it to the server with one command, removing the burden of data entry from the network supervisor and allowing multiple servers with similar structures to be configured quickly. Origen costs $695 for the initial software and a three-server license.

Other applications aid in basic network maintenance chores. Examples of this type of product are JA Lomax Associates' Lomax Utilities, BindView+ from The LAN Support Group and LT Auditor from Blue Lance, Inc. These applications generate reports that consolidate essential information pertinent to tracking resource utilization and usage patterns, auditing and security.

Frye Computer Systems, Inc.'s NetWare Early Warning System and Network Computing, Inc.'s LANAlert allow continuous monitoring of a server's status, signaling the system administrator when the predefined thresholds for variables have been met. Pricing for these packages ranges from $300 to $1,000 per server.

Reactive solutions

Many part-time system administrators work in a reactive mode, using management data to find a solution after a problem has occurred. The dearth of low-end tools that can filter data hampers efforts to make network management a more proactive process.

There are numerous protocol analyzers that can collect the traffic data and monitor lines. Among them are Network General Corp.'s Sniffer, Spider Systems, Inc.'s SpiderAnalyzer and Bytex Corp.'s ATS1000, which are dedicated, portable personal computers with net interface hardware and analysis software.

Some systems can examine only one net segment at a time since they cannot communicate with devices across bridges. The Spider Systems and Network General models overcome this limitation through the use of remote probes placed on each segment. These probes normally communicate in band over the network media but can switch to a serial out-of-band link to the analyzer if necessary.

All-inclusive analyzers aren't cheap. List prices run from $10,000 to $20,000, depending on the media and particular features supported.

For smaller networks and tighter budgets, software-only analysis solutions that run on regular workstations are available. Such applications include Brightwork Development, Inc.'s ARCmonitor+ and Emonitor+ ($295 each), Thomas-Conrad Corp.'s TxD ($195), Network General's Watchdog ($1,995) and Fresh Technology Group, Inc.'s NetVision ($495).

Making use of the management statistics collected is another matter, though.

"There aren't any real good tools out there to crunch the data and give you meaningful output," observes Jeff Carrell, a senior engineer at a national air transportation company who asked that his company not be named. Carrell's group uses Novell's LANalyzer to gather basic traffic statistics, but the burden of deciphering data still falls on human administrators.

The development of more user-friendly management solutions may also depend on better APIs. "Often, the type of information available to the user is very selective due to [limited or absent] API access," explains Ed Liebing, president of Network Technical Services, a network consultancy in Provo, Utah.

In fact, at least one operating system vendor, Novell, is working to address this problem. At its March developers' conference, Novell presented a two-phase plan for introducing an object-oriented network management architecture.

The first phase will be directed toward data acquisition from managed nodes. This interface will be a foundation for Novell's own — and possibly industry — standard management protocols. The second group of APIs, for data presentation, will aid in the construction of management console applications such as monitoring, device control and alerts.

Another issue that LAN managers must face is how to efficiently maintain consistent access to network resources across diverse workstation environments. As the LAN grows, so does the array of possible configurations on networked machines.

To keep track of the configurations, Carrell's company is currently looking at GraceLAN from Technology Works, Inc. and SuperVisor from CSG Technologies, Inc., two products that poll Apple Computer, Inc. Macintosh workstations for their configuration information.

In Carrell's firm, the products would report on applications running on the machines, which would minimize potential incompatibilities between different software versions.

NETinc's Toney says his company needs products that permit the information collected to be used by other applications. Right now, NETinc's $295 NetMenu must provide its own large set of workstation environment variables that dynamically set up menu options based on the user's particular configuration.

Ideally, menu generators such as NetMenu and Saber Software Corp.'s $395 Saber Menu System or a user support tool such as Blue Lance's LT HelpDesk would be able to draw directly on the data bases created by workstation cataloging applications. These applications collect information on which machines are connected to the net and what their configurations are.

Two examples of such applications are Horizon Technology, Inc.'s $495 LAN Auditor and MAGEE Enterprises, Inc.'s $395 Network H.Q. Both automate the process of tracking the physical location and setup of workstations on Novell nets.

Reconcilable differences

Clearly, LAN management can mean different things depending on the type of situation in which the network exists and who is saddled with the task of keeping it running smoothly. No matter what the definition is, however, most administrators share an essential need for good, solid information that can allow them to solve problems as they appear and plan ahead in order to satisfy future user demands.

The advent of management protocol standards, such as SNMP, has facilitated the development of solutions that meet the current challenge of administering heterogeneous environments.

By and large, the current crop of high-end and mid-range comprehensive management tools provides much of the functionality that large-installation LAN managers need. However, these tools are generally expensive and require a significant amount of expertise to fully utilize.

Until current management technologies become an integrated part of network operating systems or are available on more accessible platforms, the small-scale user will have to rely on third-party add-ons and single-vendor products.

Letters

continued from page 31

formation, see "Brokerage to build on-line clearance net," NW, *July 8.*

Half full or half empty?

I was disappointed in the story "AT&T FTS 2000 customers air their grievances," (*NW,* June 24). It did not represent the intent, spirit or value of the forum.

We all know there are two ways of looking at a glass filled midway — half full or half empty. Your story took the pessimistic view. To AT&T, that glass was overflowing with high-quality input from our customers presented to us in a professional, concise and positive manner.

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Richard Lombardi
Vice-president
AT&T Federal Systems
Silver Spring, Md.

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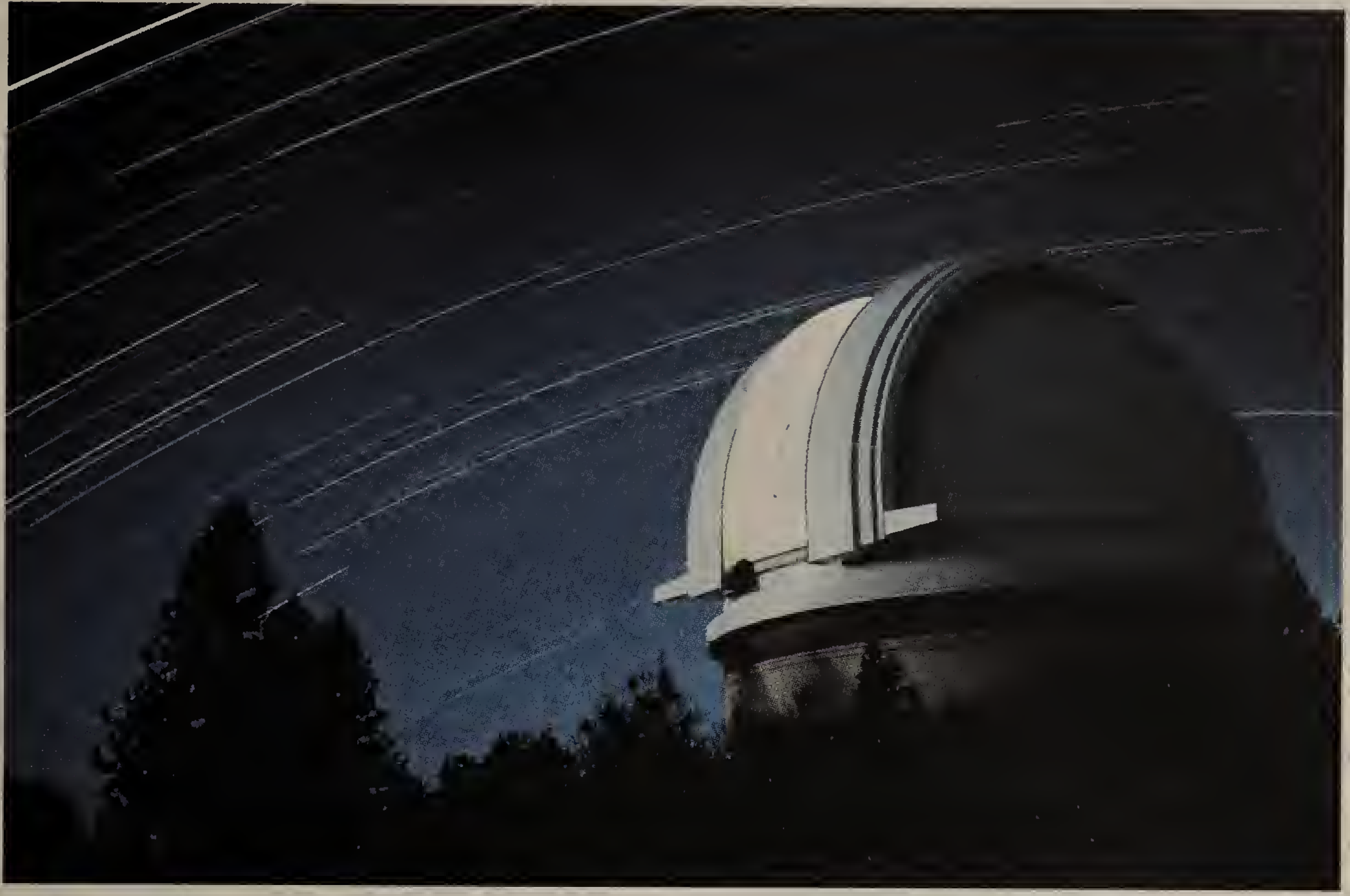

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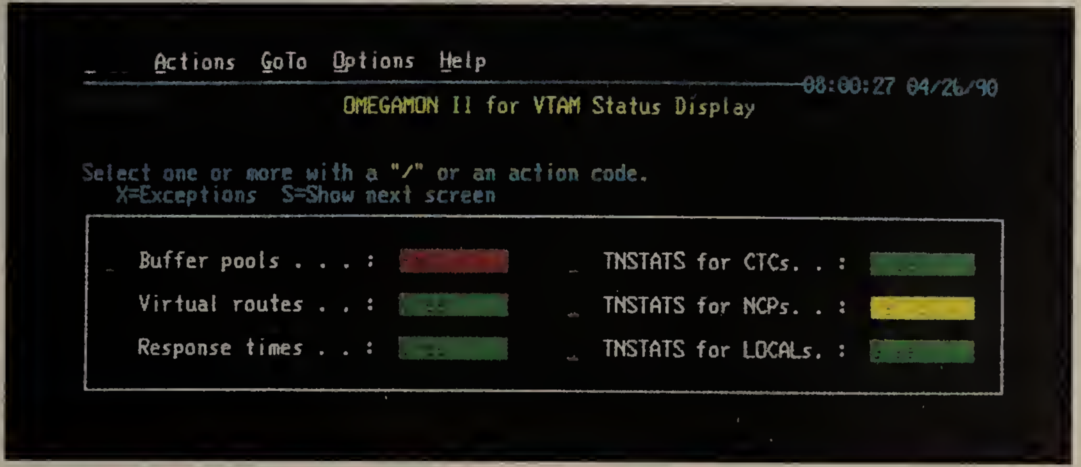

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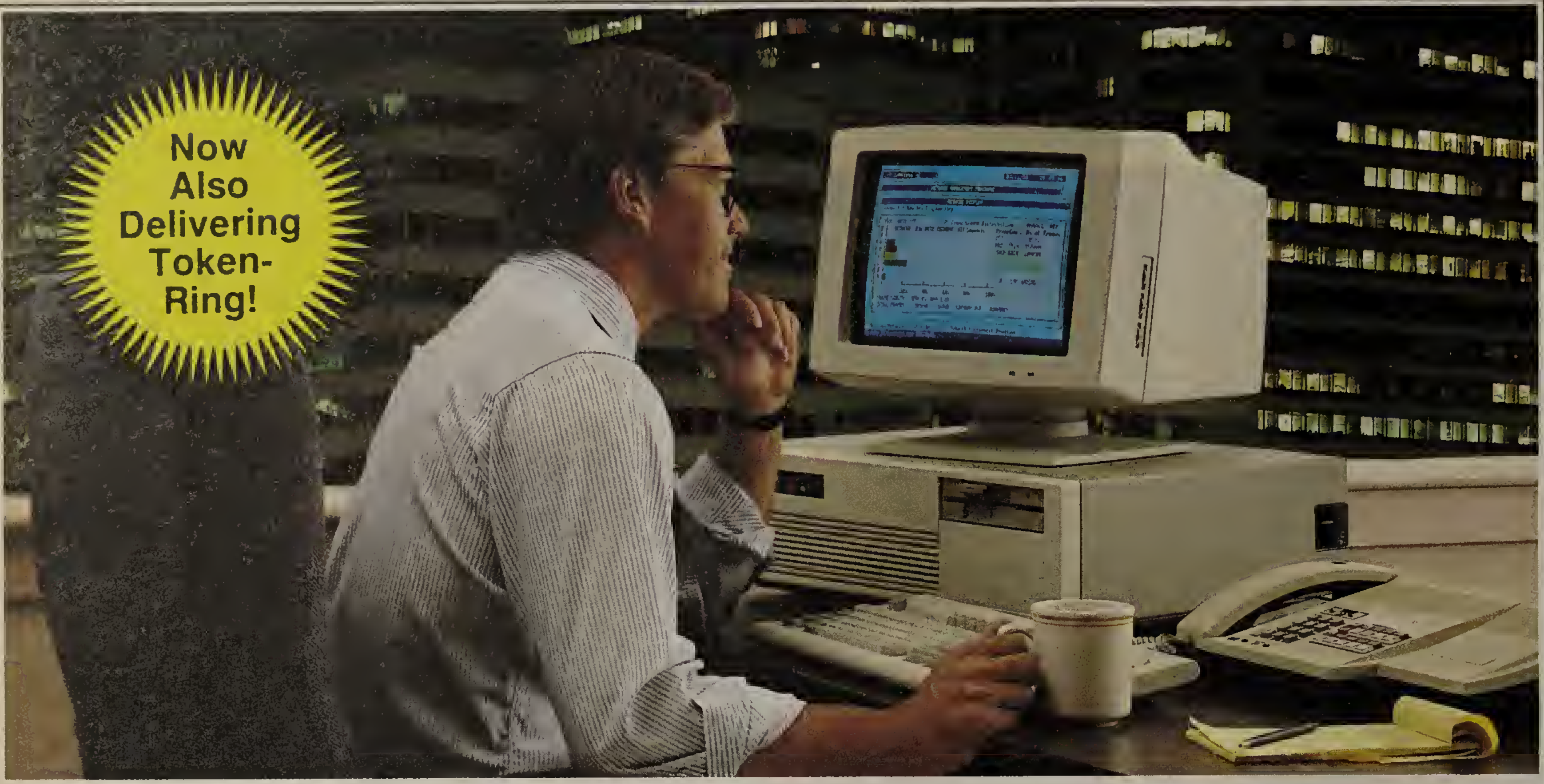

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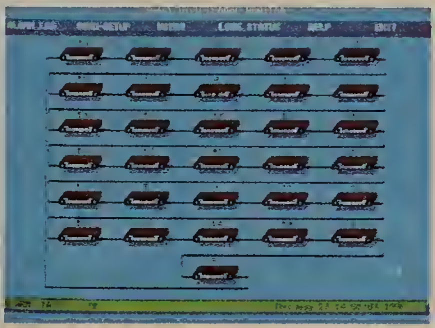

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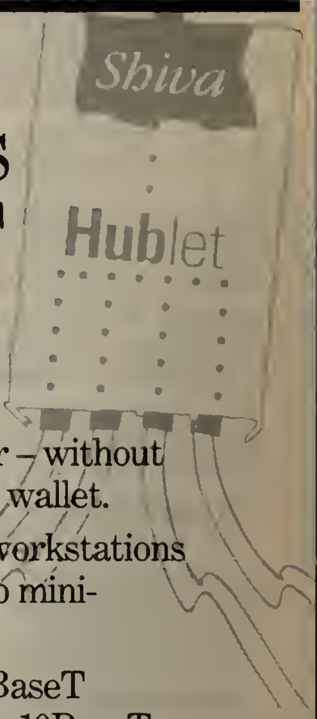

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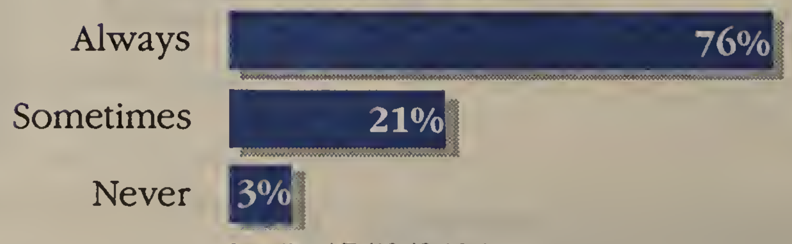

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1991 Editorial Calendar and Ad Scheduling Guide

Issue Date	*Networking Careers* Space Rsrv. Deadline	Editorial Feature	Bonus Show Distribution
July 22	July 10	LAN management update	
July 29	July 17	Technology Trends: Packet networks of the future	
Aug. 5	July 24	Focus on applications architectures	
Aug. 12	July 31	Buyer's Guide: Virtual network services	DCI/NW Mfg. Nets
Aug. 19	Aug.7	LAN Internetworking strategies	
Aug. 26	Aug.14	Buyer's Guide: DSU/CSUs	
Sep. 2	Aug.21	Technologies of the Future: Optical switching	
Sep. 9	Aug.28	Buyer's Guide: Bypass carriers	
Sep. 16	Sep.4	Groupware	
Sep. 23	Sep.11	1. Buyer's Guide: Switched data services 2. Annual Budget Survey	TCA
Sep. 30	Sep.18	Technologies of the Future: X.500 and directory services	
Oct. 7	Sep.25	1. Buyer's Guide: LAN DBMS 2. TCP/IP network management	Interop, CMA Telecom '91
Oct. 14	Oct.2	1. Buyer's Guide: 10BaseT equipment 2. Building an internetwork	NetWorld '91Dallas
Oct. 21	Oct.9	1. Buyer's Guide: Superservers 2. Evaluating LAN security	Comdex Fall
Oct. 28	Oct.16	Wiring systems	
Nov. 4	Oct.23	Distributed processing/client/server computing	
Nov. 11	Oct.30	Buyer's Guide: ISDN service	
Nov. 18	Nov.6	Buyer's Guide: ISDN equipment	
Nov. 25	Nov.13	User Excellence Awards	
Dec. 2	Nov.20	Buyer's Guide: Integrated network management systems	Networking Open Sys. '91
Dec. 9	Nov.27	DECnet update	Dexpo West
Dec. 16	Dec.4	Buyer's Guide: FDDI equipment	
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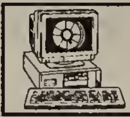

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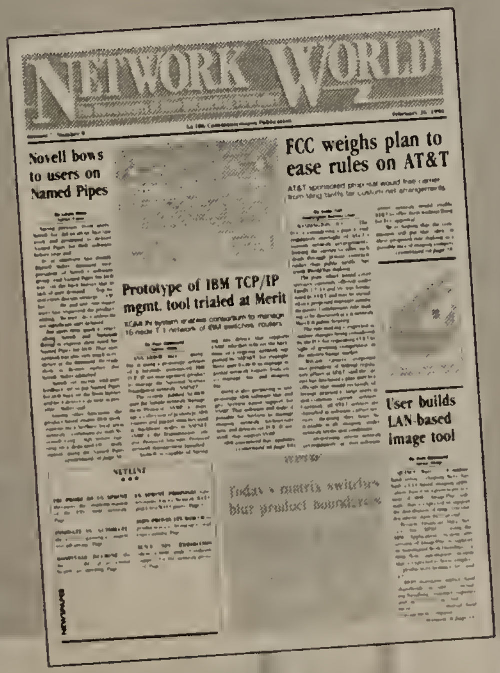

NETWORK WORLD

Novell bows to users on Named Pipes

FCC weighs plan to ease rules on AT&T

Prototype of IBM TCP/IP mgmt. tool trialed at Merit

User builds LAN-based image tool

Today's matrix switches blur product boundaries

For John Brockett, Assistant Vice President of Telecommunications at CSX Technology in Jacksonville, FL, networking means annualized savings of over $12 million. While he and his telecommunications staff provide voice, data, image, and video services to all corporate offices and major business units, about 85% of their efforts are dedicated to CSX Transportation, the corporation's 22,000-mile railroad system.

"Our large private network has given us the most leverage in reducing costs. This 4000-mile fiber-optic backbone links 350 voice and 200 data locations, plus 10 videoconferencing rooms. Alone, it accounts for a good two-thirds of the $12 million we're saving annually, primarily in long-distance service and private data lines.

"The railroad, in particular, is always looking for ways to reduce its operating budget. Telecommunications technology has been effectively utilized to enable consolidation of distributed field operations such as dispatching and crew calling into one centralized train control center, resulting in lower operating costs and a more efficient operation. A strong network provides two-way communication between dispatchers at the center and engineers, conductors and brakemen in the field. Now, fewer dispatchers control train movement over 300 to 400 miles of track.

"Networking also plays a key role at the CSX customer service center. Supported by an 800-number service and a large PBX with a call distribution system, representatives deliver up-to-the-minute status reports to as many as 20,000 customers every day.

"Now we're looking at other programs in hopes of saving another $3 to $4 million annually. But we can't do it alone. We need *Network World's* timely coverage of new technologies and products. When we read about specific product features, it triggers us to talk with suppliers and find out what's applicable to our network. *Network World* is also an excellent source for gaining insight into the network applications, supplier contracts and competitive pricing strategies of other organizations. And it's where we turn for updates on FCC and state government regulatory actions.

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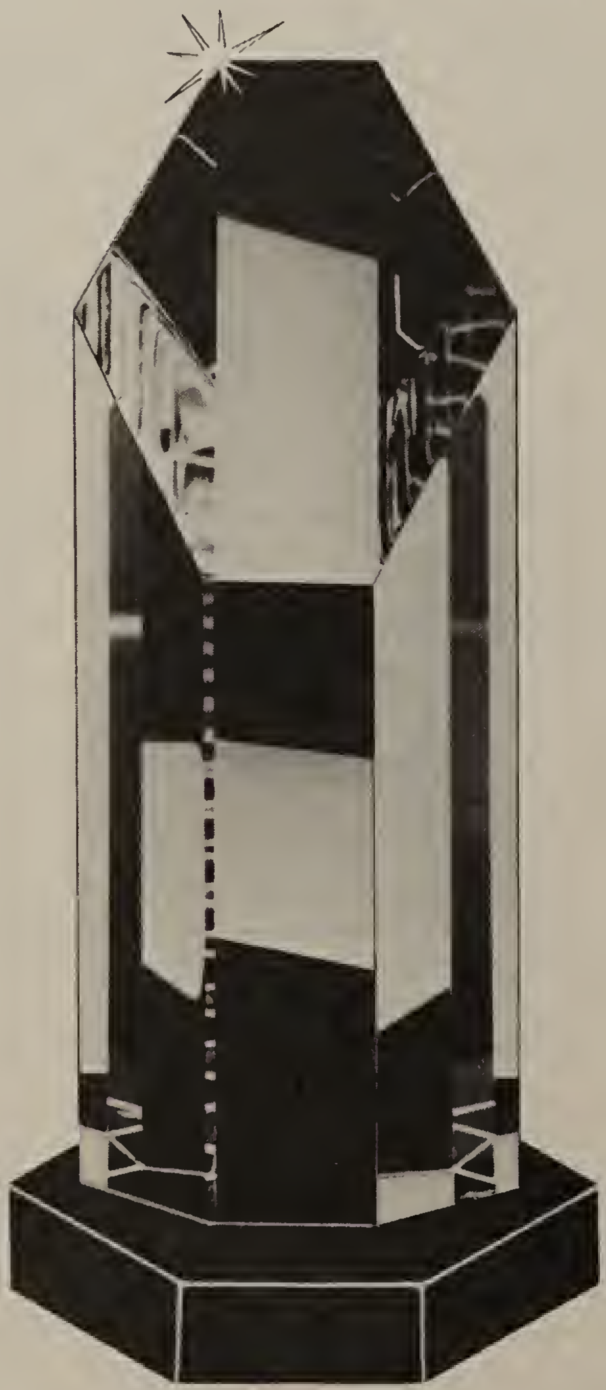

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Indiana U. merges traffic onto backbone

continued from page 17

Ellis said TCP/IP was chosen as the short-term solution for integrating resources. Eventually, the university plans to migrate the internet to OSI when those standards are fully developed.

Each of the eight campuses was outfitted with a campus backbone supporting the transmission of TCP/IP and DECnet traffic, with dedicated T-1 lines linking the campuses.

The campus backbones range from Ethernets at the main campus, which is being replaced by a Fiber Distributed Data Interface network, to 4M bit/sec token rings. On the main campus, several thousand LAN-based personal computers on 120 subnetworks are linked to the campus backbone via Ethernets or asynchronous terminal servers. In addition, 50 Cisco Systems, Inc. routers are used to route TCP/IP, DECnet, Apple Computer, Inc. AppleTalk and Novell, Inc. Internetwork Packet Exchange (IPX) traffic across the campus.

Indiana University at Bloomington will be hub of T-1 backbone for campuswide net.

Cisco routers also link the campus backbones to T-1 and fractional T-1 lines that make up the intercampus backbone and route TCP/IP and DECnet traffic between campuses. SNA data also shares the wide-area backbone, although a separate channel is reserved for that data.

Extending services via the net

The intercampus backbone has allowed the university to deliver existing services to a greater number of end users and permit the development of new services.

The university's on-line library card catalog, for instance, resides on an IBM 3090 mainframe here and contains more than two million holdings records for libraries at all eight campuses. Any networked workstation on any campus can now obtain access to the catalog via the intercampus net.

Other applications include electronic mail, electronic conferencing, office automation services, on-line advising systems and access to academic data bases.

The university is now moving to replace the Bloomington campus' coaxial backbone with an FDDI net to support bandwidth-intensive applications and a greater number of users.

The FDDI net will become operational this month and provide 10 times the bandwidth of the current coaxial cable backbone.

The new campus backbone will enable the university to add more than 5,000 new data ports in academic and administrative sites over the next two years.

"Our goal for the 1990s is to have all the workstations on campus connected to the same general-purpose network and make all relevant computing and information resources available through the network," said Polley McClure, associate vice-president of information resources for the university. ◼

Respond to net break-ins calmly

continued from page 23

leaking out. In the meantime, the manager wages a singular investigation into the incident, refusing to seek help from corporate security officers, technical experts or users lest the failure become public.

Then there's the overzealous manager who spends an inordinate amount of time trying to track down the perpetrators and see that they're punished. While this Rambo stance has its appeal, managers who concentrate on identifying hackers usually don't pay enough attention to shoring up system security and modifying procedures that may have allowed the intrusion in the first place.

Network managers who can keep their feelings in check during the early stages after a hacker intrusion respond best to the crisis. Instead of acting on feelings of fear, insecurity or vengeance, these managers direct a quick and thorough investigation of the break-in, keeping senior executives and users aware of the situation.

These managers enlist the assistance of corporate security officers, carrier representatives, regulatory officials and users in order to obtain all the facts surrounding the incident. The managers keep users updated on new security procedures needed to prevent further intrusions.

Managers such as these recognize that no security system is fail-safe, so they seek to eliminate all glaring weaknesses in system security and educate users about taking appropriate precautions to prevent unauthorized system access. ◼

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IBM to disclose net mgmt. plan

continued from page 1

Co.'s OpenView.

"We have been rolling it out in pieces as we announce new products," he said. "What we really haven't done is, in one sitting, try to explain IBM's network management strategy, its architecture and its future direction."

The basic idea of the new management architecture is to distribute more functions.

"We're pushing some of the management capability out into the network and using the power of some of these workstation-based systems to do the management job [instead of sending it back] to a central computer system," he said. "It keeps [network] traffic down and gets the job done where it has to be done rather than relying on a mainframe at the central site."

NetView's role under such a scenario is to gather information from the distributed management systems, control a distributed data base of configuration and other management data, and perform some automation functions, Warner said.

There are stumbling blocks on the road to distributed management, said Ray Williams, senior technical staff member for network management systems with the Networking Systems group.

"You can have the best set of management systems in the world, but unless the workstations or the nodes themselves participate in that network management, you've got an awful lot of chiefs and very few Indians," he said. IBM, along with the rest of the industry, has to develop net management agents that can feed data from workstations and other end nodes to distributed managers.

Toward that end, IBM last September introduced its LAN Station Manager product, which resides in DOS or OS/2 workstations and feeds workstation hardware configuration data to the LAN Network Manager. The latter runs on an OS/2 machine attached to a Token-Ring local-area network and is used to identify faults associated with LAN media and adapters.

Other LAN management tools that IBM is working on, according to Laura Knapp, an IBM enterprise LAN program advisor, include products to determine the source of LAN problems — whether they concern interfaces, device drivers and multivendor applications — and support for software change, installation and configuration management.

"Basically, what people are saying is, all these services that I had on a mainframe, I also want throughout my distributed or enterprise LAN," Knapp said. "That's where we're headed."

IBM also recognized that it needs to manage multivendor networks, a feat it plans to accomplish at least in part by supporting multiple protocols.

Mary Szabat, advisory programmer for network management systems at IBM, said the company is working to provide a common net management application program interfaces (API) to three management protocols: IBM's Network Management Vector Transport (NMVT), the Transmission Control Protocol/Internet Protocol's Simple Network Management Protocol and the Open Systems Interconnection Common Management Information Protocol.

IBM is also working to enable each management protocol to work with OSI, SNA and TCP/IP transport protocols, Szabat said.

Such a development would expand the range of management applications a user could employ because they would no longer be tied to specific protocols and transports. However, the common API is a long-term direction scheduled for the mid-1990s.

In the meantime, NetView already supports SNMP, although it requires use of IBM's mainframe TCP/IP software.

Another SNMP alternative will be the product IBM develops based on HP's OpenView, which will use SNMP to manage TCP/IP networks. To communicate with NetView, it will employ the recently announced AIX NetView Service Point, which converts SNMP data into NMVT formats.

"SNMP is growing; it's pervasive," Warner said. "We're going to use it to support our telecommunications products, which will be coming out early next year, and in the years to follow. SNMP is going to be with us for quite a while."

The promise of APPN

IBM's Advanced Peer-to-Peer Networking strategy, which simplifies net configuration and allows peer-to-peer communication between nodes, also promises big net management benefits over time, Warner said.

Today, there are no special management features associated with APPN nodes, which can be OS/2 or Application System/400 minicomputers, beyond those supported for traditional OS/2 or AS/400 machines. But Warner said that will change.

"We have it in our plan to [add the ability to] dynamically get topology information from APPN network nodes," Warner said. Today, that topology or net configuration data must be manually entered into VTAM on the host.

"As the topology changes, updated topology information [will be] forwarded to a system like NetView, so we can graphically present a picture of the network as it changes," Warner said.

Before that can happen, however, VTAM has to support APPN, which is not expected for at least a year.

DG bolsters AViiON's role

continued from page 1

at DG. "We're positioning it as an integration server across multiple desktops, workstations, PCs and local-area nets."

DG offers a range of options for connecting heterogeneous LANs to one another via the AViiON, Anderson said. The AViiON supports some 20 electronic mail gateways and another 20 SQL-based data base products.

In addition, it supports the Netwise, Inc. remote procedure call (RPC), which can be used to build distributed or client/server applications that work with a variety of desktop machines that also support the Netwise RPC.

The AViiON software will be a boon for users that employ different desktop devices and LAN network operating systems throughout an enterprise network, analysts said.

"It is enabling the AViiON system to be the platform that provides integration services," said John Dunkle, vice-president of Workgroup Technologies, Inc., a consultancy in Hampton, N.H.

Central to a number of the new products is DG's new SNA Token Ring for AViiON Systems, which is software that works in conjunction with DG's new VME Token Ring Controller (VTRC) board to attach an AViiON to an IEEE 802.5-compatible 4M or 16M bit/sec token-ring LAN. Previously, AViiONs could only attach to Ethernet LANs, Anderson said.

Available 60 days after receipt of order, the new token-ring software ranges in price from $1,600 to $8,100, depending on the processor. The VTRC is available now and costs $2,500.

Among the products that take advantage of the token-ring support is the LAN Manager for AViiON Systems (LM/AV), which Anderson said is DG's first implementation of the LAN Manager operating system. Based on source code from AT&T, it runs under the DG/UX version of Unix and uses the Network Basic I/O System Extended User Interface (NETBEUI) transport protocol for token-ring LANs.

Most Unix LAN Manager implementations use the Transmission Control Protocol/Internet Protocol as a transport protocol, Anderson said. DG chose NETBEUI because it will enable an AViiON LAN Manager server to interoperate with other token ring-based servers running various versions of LAN Manager or Microsoft Corp.'s MS-NET.

LM/AV supports DOS or OS/2 clients, which, when equipped with terminal-emulation software, can also access DG/UX applications running on the AViiON.

Available now, LM/AV costs $2,350 for an eight-user license and $16,000 for a 256-user license.

Also announced last week was OpenMAC for AViiON Systems, which consists of three software packages that enable users to connect Apple Macintoshes to AViiON servers. Previously, AViiONs could connect to AppleTalk nets only via NetWare servers that supported AppleTalk, Anderson said.

The OpenMAC products are based on software from Pacer Software, Inc. DG announced OpenMAC for its MV line two weeks ago.

The first product, OpenMAC/Transport, includes an AppleTalk Phase II protocol stack that runs under DG/UX. It runs on AViiONs attached to Ethernet and token-ring LANs and supports routing between multiple LAN segments.

OpenMAC/Services supports the Apple File Protocol to let Macintosh users read, execute and share files as well as applications stored on the AViiON. It also supports the Apple Printer Access Protocol to allow sharing of printers connected to the LAN or serially connected to AViiON and Macintosh machines.

OpenMAC/VT is software that runs on a Macintosh and enables it to emulate a DG Dasher D461, DEC VT-200 and other terminals to communicate with the AViiON and other Unix hosts over direct serial, dial-up or LAN links. The product makes standard Macintosh features, such as windowing and mouse-operated cursors, available to Unix applications running on the AViiON host.

All OpenMAC products are available 90 days after receipt of order. OpenMAC/VT costs $720 for a three-user license and $17,500 for as many as 256 users. OpenMAC/Services costs $960 for as many as three users and $20,000 for as many as 256 users. OpenMAC/Transport costs $400 to $600, depending on configuration.

Also on the LAN front, DG enhanced the AViiON NetWare server software it has been shipping for more than a year to support token-ring LANs. It previously supported only Ethernet.

Server to data center

DG also announced new token-ring products that allow DG's Systems Network Architecture connectivity products to be used over LANs. Previously, they had supported only Synchronous Data Link Control connections, Anderson said. Those SNA products include software that lets the AViiON emulate either an SNA PU 2 or PU 2.1 device for hierarchical or peer-to-peer communications with IBM computers over a range of SNA session types, including LU 2 and LU 6.2.

Also last week, DG announced the DECnet Interface (DNI) for AViiON, which lets AViiON servers be configured as DECnet end nodes to communicate with VAX machines over DECnets. The software works over token-ring or Ethernet LANs and supports E-mail, file transfer and application access in both directions between AViiONs and VAXes.

Available now, DNI for AViiON ranges from $1,295 to $9,190, depending on configuration.

To help users on disparate systems exchange E-mail, DG last week announced X.400 for AViiON Systems. Based on the Open Systems Interconnection X.400 standard, the software can be used to build a pure X.400-based E-mail system or let AViiON users exchange E-mail with other X.400 E-mail systems and with users on TCP/IP nets that employ the Simple Mail Transfer Protocol.

Available now, the X.400 software costs between $800 and $6,000, depending on the AViiON host on which it runs.

Spin-off plots net overhaul

continued from page 23

"We want to build state-of-the-art manufacturing systems in the next two years," Gogolin said. "There was no way I could develop the staff to meet that time frame."

According to Gogolin, the company's business applications, such as accounts receivable and general ledger, will run on several DEC VAX minicomputers at the headquarters here. NVG will use commercially available software packages wherever possible.

More than 300 terminals or personal computers running terminal-emulation software at NVG's three sites will be linked to the VAX computers via a DECnet network. The network will enable employees to access any authorized business application from any NVG site.

The speed and type of wide-area links between NVG sites is still under discussion, Gogolin said.

Applications will support a common user interface that defines screen layout, function keys, windows and other elements. This will make it easier for NVG employees to access data and send messages, according to Gogolin.

DEC will also install about 50 Unix-based engineering workstations at the three company sites. These workstations, which will run computer-aided design and other engineering applications, will be connected using a Transmission Control Protocol /Internet Protocol-based network. The engineering and business networks will be bridged so users can access information on either net.

"We want an open, flexible architecture that gives people the ability to access information they need immediately anywhere in the company, instead of waiting days or weeks for a report to be printed out," Gogolin said.

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Protocol unites SQL products

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tion is an important first step.

"The SQL Access Group is important because it's pressuring vendors to offer portability between data bases in a consistent way," said Judith Hurwitz, an analyst with Patricia Seybold's Office Computing Group, a consultancy in Boston.

Mix & match

Now that the specification is complete, vendors will integrate it into new releases of existing data base products, enabling users to mix and match a variety of front-end tools and data base servers on the same network.

The demonstration featured products from 16 vendors, including ASK/Ingres, Inc., Digital Equipment Corp., Hewlett-Packard Co., Informix Software, Inc., Microsoft Corp., Oracle Corp., Sun Microsystems, Inc., Sybase, Inc. and Tandem Computers, Inc.

Even though the demonstration was successful from a technical standpoint, surprisingly there were no product announcements.

"I think the individual companies blew it since they should have been more prepared to discuss product commitments," said Tony Percy, vice-president of Gartner Group, Inc. in Stamford, Conn. "You wonder why they called us all together; I was disappointed."

Seated (from left to right): Osamu Wada of Fujitsu, John Robertson of HP, Philip Cannata of MCC, Roger Sippl of Informix, Benoit Lheureux of NCR, Gary Hallmark of Oracle and Tony Guttman of Sun. Standing (from left to right): Stuart Gove of ASK/Ingres, Lowell Tuttman of Microsoft, Dave Himes of Cincom, Betsy Burton of Sybase, Howard Cohen of Tandem, Patti Meara of Unisys, Dave Glende of Unify, Jeff Balboni of DEC and Jeff Jones of Teradata.

While organizations such as ANSI and the International Standards Organization (ISO) have made progress toward standardizing SQL, many areas are inconclusive and left to vendors or users to define. As a result, each vendor's brand of SQL is slightly different, and communications protocols and message formats vary from one vendor to the next.

To solve this interoperability issue, the SQL Access Group was founded in 1989 as a consortium of 42 vendors and a few users to build on and accelerate the work already under way in the standards organizations.

In April, the SQL Access Group completed a specification defining a common method for data base interaction that was based on both the existing SQL standard and the work being done by the ISO Remote Data Access Committee (RDA).

The SQL Access specification calls for products to contain an embedded SQL application program interface. It also asks that the devices conform to RDA's formats and protocols, which specify the manner in which clients speak to servers.

Even though vendors will begin delivering products that adhere to this specification by 1992, most will probably still offer proprietary versions of their products because they can be optimized for such things as performance and data handling.

One conspicuous absence from the consortium was IBM.

"IBM faces a challenge to get its own data bases working together on its own hardware," Sippl said. "We wish they would join, but it will probably take customer pressure to get them to."

In case IBM does not join, the SQL Access Group is moving ahead with the development of a specification for a gateway to IBM's DB2.

Fleet/Norstar to link 900 offices

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in Albany, which will let the company manage the VSAT network itself. The bank will use AT&T's shared hub in Marietta, Ga., to support VSAT communications until construction of the private hub in Albany is completed, which should be sometime later this year.

It is a little unusual for a bank to use a VSAT network because federal regulations prohibit banks from operating in multiple states unless they have acquired a failed bank or are operating as a holding company with separate state subsidiaries. Because of this, most banks concentrate their branches in a limited geographical area, so it is usually less expensive to use leased lines.

But regional banks such as Fleet/Norstar, which through acquisitions or legal arrangements support branch offices in several contiguous states, may find that VSATs can reduce network costs without sacrificing reliability or quality, said George Mattingly, senior vice-president and director of telecommunications for First Union Corp. in Charlotte, N.C.

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Frame relay steals show

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specification that will ease equipment interoperability.

The group also addressed a number of technical issues, such as multicasting and encapsulation, and formed subgroups chartered with the task of encouraging user participation in the forum, as well as increasing international awareness of the group.

During the forum's meeting, Mary Modahl, director of network strategy research at Forrester Research, Inc. in Cambridge, Mass., released the results of a recent survey of Fortune 1,000 companies in which nearly 80% of the respondents said they would probably implement frame relay within two years.

Vendors and consultants said the activity here last week indicates that frame relay has moved from a technology of the future to something that users are looking to buy now.

"I think that in the last six months people have really gotten turned on to frame relay," said Peter Francis, industry analyst for telecommunications at Dataquest, Inc., a market research firm in San Jose, Calif. "I think people are [anxious] to get up and running."

Frame relay is an emerging packet-switching technology that makes it possible to support higher speeds than standard X.25 packet-switching by stripping off many of X.25's error-correction protocols and streamlining packet handling.

More details made available

The product and service announcements at the conference were significant not only because vendors committed to delivering product within a few weeks, but also because they disclosed more details about frame relay pricing strategies.

For example, CompuServe, Inc. announced rates for its frame relay service, Frame-Net, which is available now. Users will pay a flat-rate fee of $1,050 per month per location for 56K bit/sec access and $1,700 per month per location for 256K bit/sec access. No other public frame relay service provider has yet disclosed pricing.

However, Andy May, director of marketing for CompuServe's network services division, said his company may increase or lower Frame-Net prices after it gets more experience with actual usage and demand.

Hughes Network Systems, Inc. announced the availability of a $16,000 interface that enables remote devices to access its Integrated Packet Switch via frame relay. When this card first shipped in February, it could only route frame relay traffic between Integrated Packet Switches, which remote devices could then only access via X.25.

Proteon, Inc. said it will begin beta-testing frame relay support on its CNX 500 and p4100+ routers with about six customers in August. General availability is scheduled for October. Frame relay support costs $750 for the CNX 500 and $500 for the p4100+.

Not all the news was good, however. BT North America, Inc. admitted that its frame relay service, which was supposed to become available in the second quarter, will not be available now until September.

In its demonstration, Netrix used frame relay to route data between six Ethernet local-area networks. The LANs were linked to bridges and routers from five vendors, which in turn were linked via frame relay at speeds ranging from 64K to 384K bit/sec to three Netrix #1-ISS fast-packet switches. The switches were linked via 384K bit/sec circuits. The participating router and bridge vendors were Advanced Computer Communications, Cisco Systems, Inc., CrossComm Corp., Proteon and RAD Networking Devices.

Netrix officials said their booth included the first demonstration of a proposed frame relay standard, dubbed Annex D, which lets routers and other devices exchange net performance and configuration information with frame relay switches.

Vendor group to test X.500

continued from page 4

tempted to build a large-scale, distributed X.500 directory," Myer said. "There's been a lot of work done on X.500 directories in the academic community with Internet, but a full-scale commercial pilot should really add to our knowledge base about X.500."

Although Myer declined to predict when commercially available X.500 directories will be in place, he said the forthcoming 1992 version of the X.500 standard should expedite implementation of the standard in new products and services.

John Sherburne, director for product planning at US Sprint Communications Co., said his company plans to extend its existing proprietary reference data base to incorporate a complementary X.500 reference data base under the pilot. This will enable users to look up E-mail addresses as if they were searching through a phone book.

The carrier will hold off on moving to X.500 for its routing system — which would enable users to send messages to any other user without needing to know their address — until X.500 is more mature, Sherburne said. That is because users expect faster response for this service than for a basic address lookup, and US Sprint is not yet sure how X.500 will perform.

But users said they are encouraged by the NADF plan. "I really think X.500 may be more important than X.400," said Bill Klauk, manager of communications operations for Continental Grain Co. in New York, which is in the early stage of using X.400. "It's difficult to get a lot out of X.400 without the directory services provided under X.500."

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Bank mergers test mettle

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Pacific Bell in San Francisco and former chief information officer (CIO) at Wells Fargo Bank, N.A., which acquired Crocker National Corp. in 1986.

The key to merging IS and networks is to do it fast and efficiently, according to bank CIOs interviewed by *Network World.* The quicker the consolidation, the bigger the cost savings, they said.

"There is a lot of money to be made [in consolidating IS and networks] if you move quickly and don't study the issue to death," said George DiNardo, former CIO at Mellon Bank, N.A., which acquired seven different banks during his tenure there. "The mistake some banks make is being too conservative and not acting quickly enough."

Most CIOs said consolidating networks should take no longer than three months, depending on the size of the banks being merged. Banks can eliminate redundant circuits where the networks overlap and connect the nets where they don't.

The key is to consolidate traffic on a single network as soon as possible in order to realize savings from casting off duplicate facilities and qualifying for higher volume discounts on the remaining lines.

"By combining [traffic] volumes, you can immediately drive down usage costs at least two cents per minute," DiNardo said.

DiNardo estimated that Manufacturers Hanover and Chemical Bank should be able to consolidate their nets within three months and save $10 million per year on line costs alone.

Often, what happens to the network is dictated by the decision about which data centers to close. While merging networks may be relatively easy, consolidating data centers and integrating diverse applications running on incompatible software and hardware is a far greater challenge, the CIOs said.

Consequently, many CIOs are tempted to simply scrap one bank's systems in favor of the other's. This eliminates the difficulty of building interfaces between systems and supporting dual sets of programs.

Pacific Bell's Hancock adopted this strategy when Wells Fargo bought Crocker National. Within nine months of the acquisition, all of Crocker National's bank accounts were running on Wells Fargo's systems, Hancock said.

"It wasn't a matter of whose systems were the best, but which we could adopt the quickest," he said.

According to Hancock, such wholesale conversions are more easily done when one bank acquires another and is clearly calling the shots rather than when two equals merge, as is the case with Manufacturers Hanover and Chemical Bank.

But some CIOs say it is unwise to rush into scrapping all of one bank's systems.

"You can throw away some real gems," said DiNardo. "If one bank has vastly superior systems, it's worth the extra work to integrate them because they will provide a lot of advantage."

Consolidating systems and networks is an expensive and time-consuming endeavor. Realizing this, small and midsize banks without adequate staff or capital often turn to outsourcing firms, such as Electronic Data Systems Corp. (EDS), to get the job done quickly with minimum expense.

First City Texas Bank Corp., for example, recently awarded EDS a contract to standardize the systems and networks used by banks it has acquired in the past few years. EDS runs the automated teller machine network and branch applications for First City Texas and its subsidiaries.

The contract will enable First City Texas to acquire a new bank and turn over responsibility for integrating the computer and network operations to EDS, saving it considerable time and money, according to J.W. Pieper, executive vice-president at First City Texas-San Antonio.

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PictureTel intros low-end systems

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grated Dynamic Echo Cancellation. The Models 20 and 100 allow users to select transmission speeds from 56K to 128K bit/sec, with the higher speed providing better picture quality.

The drawback to the low-priced systems is that they support fewer features than the other models in the System 4000 line, which was introduced in January. For instance, the cameras on the Models 20 and 100 are manual, while the cameras on the more expensive systems are remote-controlled. In addition, the videoconferencing systems don't support the Px64 standards, which allow different vendors' systems to interoperate.

> The drawback to the low-priced systems is that they support fewer features.
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Both models, however, can be upgraded with such features.

Norman Gaut, PictureTel's chairman and chief executive officer, said the Models 20 and 100 "provide us with an entry-level product for Fortune 500 companies and below."

Gaut acknowledged that the low-end systems could cannibalize sales of higher end products and hurt PictureTel's bottom line since they offer lower profit margins. But he said market research showed a need for low-priced systems from a different set of users than those that would buy PictureTel's higher end models. He expects sales of the low-cost systems to more than offset any lag in high-end product sales.

"We want to test the elasticity of the market," Gaut said.

Datapro's McElgunn said price has been a considerable barrier for users contemplating buying videoconferencing systems. "Keep in mind that no one buys just one videoconferencing system," he said.

Users agreed. "The new models might not have as many features as the old ones, but they are built on a solid foundation and are backwards-compatible with our existing systems. That's what's important," said Tom Cooley, director of telecommunications at Allied-Signal, Inc. in Southfield, Mich.

Analysts said PictureTel's competitors may be forced to react to its aggressive pricing. But not all rivals agreed.

According to John Walsh, executive vice-president of marketing and sales at Compression Labs, Inc., a San Jose, Calif., videoconferencing vendor, "We're always looking to reduce prices, but we won't do so to respond to this." Compression Labs will introduce products next year that will address the video telephony and desktop videoconferencing markets, he said.

Novell to buy Digital Research

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With the completion of the merger, expected in October, the two companies will begin work on a value-added version of DR DOS.

"Our stragegy from the outset with DR DOS has been to offer a significant value-add of MS-DOS," said Dick Williams, president and chief operating officer of Digital Research. Today, DR DOS offers integrated file-linking capabilities, in addition to the ability to fully execute files from read-only memory — features MS-DOS does not offer, he said.

However, Williams said, Digital Research and Novell together will continue to enhance the product. "We're going to enhance functionality in all areas — in memory management, power management, file management and file optimization," he said.

Analysts and users did not second-guess Novell's intentions for buying Digital Research, even though rumors have been circulating for some time that Novell is developing its own Intel Corp. 80386- and peer-to-peer-based personal computer operating system.

"I think Novell did this just to cover its bases with a client operating system," said Jamie Lewis, vice-president at Clarke Burton Corp. in Salt Lake City.

"In the next three to five years, file and print services will need to be integrated with the desktop," he said. "A lot of [Microsoft] LAN Manager services will be intrinsic to some future operating system Microsoft will sell, and Novell's not sure Microsoft will support NetWare. So this way, Novell can be sure," it will have a client platform for native NetWare services.

Novell's Miller said the new versions of DR DOS will be targeted at "all users that use DOS as their primary desktop operating system, including those that have MS-DOS." But analysts and users fear Novell is setting its sights too high.

"People don't like to change — change is a pain in the neck," said Glenn Fund, president of the Boston Area Novell Users' Group. "The only reason for me to change would be if there were a big incentive — like if they were providing features that I'm not getting now and I really need."

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ALLIGATORS IN THE SWAMP

Unforeseen problems that can put the bite on your network

Dealing with vendor-user mismatches

Communicating your expectations up front can ensure a happy relationship.

Your company is in the market for a particular network product or service. As the network manager, you do some research, shop around, talk to some vendors, get references from their users and make what you feel is an informed decision.

Then, a few months into the relationship, the road starts to become rocky. You find that your vendor is pushing new, relatively untried solutions while your company craves stability. Or your firm is looking for innovative approaches only to find your vendor is pushing tried-and-true solutions. Or economic changes seem to dictate a shift in network management strategy, but your vendor advises you to "stay the course."

The relationship between a user company and its network vendor is like a marriage: In order for it to succeed, both parties must communicate their needs and understand the other party's needs as well. Communication difficulties are often the warning sign of a vendor-user mismatch.

A midsize financial services company, which requested anonymity, learned this lesson recently when its minicomputer-driven office tools network began having problems. The net, which served the spreadsheet, word processing and electronic mail needs of more than 1,000 users, kept crashing — without warning or apparent cause. The company contacted its hardware vendor, which immediately devoted its research labs to identifying the cause of the problem.

"The vendor's engineering staff was convinced they could design an innovative solution to the problem if they could only analyze enough data," recalls the user company's manager of network services. "But we needed immediate relief." Worker productivity suffered as the network continued to crash intermittently for three weeks.

By devoting its research labs to solving its user's problem, the vendor felt it was providing excellent customer service. But from the user's perspective, the vendor was treating the problem as if it were an academic exercise rather than an emergency. "It took some yelling to get them to see that their customer service efforts were not satisfying [us]," the manager says.

Finally, the vendor sent two research engineers to the user site, and they quickly found the cause of the problem. "Our transaction rate was exceeding the benchmark test transaction rates; we were simply overloading the hardware," the manager says. A solution was quickly engineered, and the network was back up in a few hours.

Identifying the mismatch

Vendor-user mismatches aren't always immediately apparent. In a heterogeneous network environment, a single incident may not be adequate to identify a pattern of inappropriate response from a particular vendor.

As in the example above, the basic cause of most vendor-user mismatches is miscommunication or misinterpretation of needs and expectations. Good service can't be provided when vendors and customers define service differently. If the user doesn't explicitly state its service expectations, chances are good that the vendor won't live up to them.

Some questions that may help identify a service mismatch are:

- Is the vendor looking at the problem from my company's perspective, or are we expected to fit into one of their service categories?
- Have we explicitly told the vendor what we expect?
- Has the vendor explicitly told us what we can expect?
- Are we satisfied with the service we've received?
- If service has recently changed, do I understand why?

Another way to determine whether you and your network vendor are mismatched is by comparing your vendor's preferred way of providing service to your company's preferred way of receiving it.

Network vendors can be categorized as providing service "to," "for," or "with" their customers.

Vendors that prefer to deliver products and services "to" their customers target a passive, somewhat dependent user that will follow directions and pay its bills. These vendors typically deal in commodities-quality goods or services, such as cables and connectors, and specialize in quick delivery and low cost. The "to" vendor often doesn't focus on developing long-term relationships, knowing its user base is loyal mostly because of availability and price.

Few user companies today can afford to rely on a "to" vendor. The heterogeneity of today's networks demands equal participation between the user and vendor. Yet the "to" vendor may see user participation as a hindrance. As a result, the "to" vendor's responses tend to be generic rather than geared to solving a particular client problem.

Vendors that deliver goods and services "for" their customers may differentiate their products by price, quality, feature, availability or any of an array of other attributes. They prefer developing long-term, dependent relationships based on shared experience. However, their compulsion to do things for their users may cause these vendors to overlook the root of the problem entirely, as in the example mentioned earlier.

"For" vendors typically seek a moderate level of user participation. If the user becomes too actively involved, these vendors may become uncomfortable and feel they're being second-guessed.

Vendors that deliver goods and services "with" their customers are typically "high-touch" and hands-on. They differentiate their products by intangibles, such as the perception of quality or brand name recognition, and they prefer long-term relationships built on shared understanding and trust.

"With" vendors require and expect considerable user participation. Before selecting this type of vendor, the user must determine if it has the time, interest and personnel to maintain such a relationship.

Preventive measures

Obviously some vendors will enter into a relationship with any type of user, regardless of the likelihood for long-term success. Users, however, can't afford to be so cavalier; they must realize that their relationship with their vendor will most likely last a long time and have a high impact on their network's operation. So it's up to you as the network manager to screen the vendor at least as carefully as you screen the vendor's product.

Realize that not every vendor is capable or interested in providing your preferred style of service. To find one that is, spend time up front talking with the prospective vendor. Listen carefully. Understand what the vendor can deliver. If you're unsure of its ability to address your company's needs, work with the company to address the deficiency, develop proactive strategies for alternative support or investigate other vendors. Get explicit about the service you want. Vendors aren't mind readers!

Don't wait until your network develops a serious problem before assessing your vendor's ability to provide the service you require. It could be a matter of life or death for your network — and your career. ◻

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IT'S HARD TO DRAIN THE SWAMP when those reptiles keep getting in the way. To share your "alligator story," call Susan Collins, associate features editor, at (508) 820-7413 or fax your idea to (508) 820-3467.

By DAVID SCHMALTZ

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